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**Toward a New Model: Integration of the Resource-based  
View and Institutional Theory to Explain the Heterogeneity  
of MNEs' Outward FDI Strategy and Performance**

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## **Author's Declaration**

I, Linjie Li, hereby declare that the work presented in this thesis is my own. It has not been submitted, either in part or whole, for a degree award at other universities. Where information has been derived from other sources, I confirm that it has been clearly indicated.

Signed:

Date:

## **Dedication**

### **To my parents**

Mr. Hongxing Li and Ms. Jihong Jiang

### **And my boyfriend**

Mr. Jialu Jiang

**For their never-ending love, encouragement and support**

## **Abstract**

This thesis develops and tests a new model which integrates the resource-based view (RBV) and institutional theory to explain MNEs, especially emerging economy MNEs' (EMEs) outward foreign direct investment (OFDI) strategy and performance. Existing literature has highlighted the significance as well as limitations of the RBV and IT in an international business context. Recently scholars argue that the RBV and IT should be combined for better applicability in MNE study. However, so far, there has been no work that comprehensively addresses the following questions: What are the limitations of the RBV and IT in the international business context? What are their boundaries and overlaps for MNE study? In the international business context, why should the RBV and IT be integrated and how can they be integrated to better explain MNEs' OFDI strategy and performance?

In order to fill the above research gaps, this thesis firstly discusses the limitations, boundaries, and integration mechanisms of the RBV and IT in an international business context, based on which, a new model integrating the RBV and IT is developed to explain/predict MNEs, especially EMEs' OFDI strategy and performance. Theoretical propositions are proposed in the theory-building chapter (chapter 2).

To test the above new model, three specific empirical studies (chapters 3, 4 and 5) are conducted. As a baseline of the model, chapter 3 examines how MNEs' resources, institutional conditions and OFDI strategies affect their performance directly and separately. Specially, controlling for EMEs' self-selection into the global investment market, chapter 3 investigates how EMEs' resources, institutional conditions, and OFDI strategies affect their productivity gain from OFDI. The propensity-score matching and difference-in-difference (DID) approaches are combined to test the theoretical framework, utilizing unique data on Chinese manufacturing firms over the sample period 2002–2008. The results provide insights

into this topic by indicating that EMEs without state ownership but with stronger absorptive capability gain higher and sustainable productivity effects. Such gains are lagged if merger and acquisition (M&A) are employed as an entry strategy, and gains are higher for EMEs investing in developed than in less developed countries. Policy and managerial implications are discussed.

Chapters 4 and 5 investigate the determinants and impact of MNE subsidiaries' bribing strategy in corrupt contexts. An analytical framework is built based on an integration of institutional and resource-based constructs, and tested using firm-level data from 2210 subsidiaries operating in Africa. Controlling for the subsidiaries' self-selection to bribe, the findings, based on the Tobit, Heckman two-step, OLS and IV regression results, indicate that the heterogeneity of MNE subsidiaries' resources and perceived corrupt pressures lead to differing bribery strategies in response to host country corruption, and these two variables then interactively moderate the impact of bribery on MNEs performance. MNE subsidiaries' perceived level of host country corruption produces a positive effect on their choice of bribery. But the subsidiaries' home-country anti-corruption levels and their holding of internationally recognized quality certification (IQC) reduce MNE subsidiaries' willingness to pay bribes. A more interesting finding is that, after controlling for MNE subsidiaries' perceived pressures of corruption in host countries, MNE subsidiaries' home-country anti-corruption levels and MNE subsidiaries' holding of IQC negatively moderate bribery's effectiveness on performance. Theoretical and managerial implications of the findings are discussed.

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## **Chapter 1: Introduction**

### **1.1 Research Background and Thesis Structure**

In 2015, global flows of foreign direct investment (FDI) jumped by about 40 per cent to \$1.76 trillion (\$1,065 billion outward flows from developed economies and \$378 billion outward flows from developing economies), the highest level since the global economic and financial crisis of 2008-2009 (UNCTAD, 2016). However, the dramatic growth of global outward FDI (OFDI) flows did not translate into an equivalent positive result on multinational enterprises (MNEs). While some MNEs gain monopolies in international markets, others suffer from inappropriate investment strategies and corresponding poor OFDI performance, which stimulates scholars to declare the importance of figuring out the factors which determine MNEs', especially emerging market MNEs' (EMEs) OFDI heterogeneity (Martin, 2014; Dunning and Lundan, 2008; Brouthers, Brouthers, & Werner, 2008b; Liu, Gao, Lu, & Lioliou, 2016). Comprehensive identification of the determinants of MNEs' strategy and performance thus is essential, both theoretically and practically, as MNEs can learn lessons from others and a more sophisticated theoretical philosophy assists them a lot to formulate correct strategies that fit themselves maximally (Peng, Wang, and Jiang, 2008).

So what determine the heterogeneity of MNEs' internationalization strategy and performance? This question has been fundamental to international business scholars. Since Hymer (1960) and Vernon (1966), many attempts have been made to articulate a satisfactory theory for predicting MNEs' OFDI activities, but what all of these approaches have in common is that they are asset-based theories (Dunning and Lundan, 2008). Inspired by Penrose (1959), the RBV places its main focus on the accumulation of technological assets and knowledge by firms across borders, and contributes to our

theoretical understanding of what determines the boundaries and performance of MNEs over time and space. Barney (1991) then suggests that the variation in MNEs' internationalization is a function of inter-firm resource heterogeneity, and it is the resource-based advantages that enable MNEs to generate competitive advantages and thus determine their strategic choices and OFDI results (Barney, 1991; Wang et al., 2012). Dunning's OLI or eclectic paradigm (Dunning, 1980, 1988) also emphasizes that it is the exploitation of MNEs' ownership advantages, which derives from MNEs' valuable, unique, and hard to imitate resources, e.g., technological and marketing resources (Kotabe, Srinivasan, and Aulakh, 2002), R&D (Kafouros and Buckley, 2008), brand, international knowledge and experience, that determines MNEs' OFDI strategies (Brouthers et al, 2008; Chen et al., 2009) and "distinguishes the winners from the losers and mere survivors in global competition" (Peng, 2001; Rugman and Verbeke, 2002).

However, notwithstanding its valuable insights, the RBV has been argued a lot by international business scholars for its ignorance of institutions' effect on MNEs' resource accumulation and exploitation (Peng et al., 2008; Brother et al., 2008; Priem and Butler, 2002; Khanna and Yafeh, 2007; Li and Peng, 2008; Zacharakis, McMullen, and Shepherd, 2007; Makino, Isobe, and Chan, 2004; Wang et al., 2012; Barney, 2002). It is suggested that the RBV has not looked beyond the properties of resource and imperfect resource markets to explain MNEs' enduring heterogeneity. In fact, as MNEs are operating cross-border, their variations and heterogeneity in competitive advantages could also lie in their embedded home countries (Kostova, Roth, and Dacin, 2008; Cuervo-Cazurra and Genc, 2008; Porter, 1980, Wang, 2012; Martin, 2014). In addition, in an international business context, MNEs' rare, valuable, and hard-to-imitate resources in one context could be plentiful, non-valuable, and easy to imitate in other contexts, which indicates that MNEs' heterogeneity of strategy and performance could not be predicted by sole resource-based factors, but a combination of resource-based factors

and institutional factors (Oliver, 1997; Brouthers et al., 2008; Wang, 2012). Developed country MNEs' initial internationalization was based on resource-based ownership advantages that had evolved in a rather interactive way within the development of their home country, taking forms needed to be competitive there, and their decisions to commit to international expansion were based on the firms' own perception of opportunities in foreign locations that could be best exploited by the activation of their in-place resources. Different from the RBV's prediction, EMEs' initial internationalization has been occurring before such firms have plausibly had the firm specific resources that could facilitate entry into international competitiveness in the traditional fashion, and before their domestic market positioning was provoking reasons for them to consider doing so. Since general resource-based theories of OFDI are developed based on experiences of MNEs from industrialized countries, their ability to account for OFDI from developing countries, especially emerging economies, has been the subject of recent debate (Collinson and Rugman, 2007; Dunning, 2006; Mathews, 2006b; Narula, 2006; Aharoni, 2014; Cuervo-Cazurra, 2012; Dunning, Kim and Park, 2008; Godley, 2014; Ramamurti, 2012; Rugman, 2010), and an alternative framework to explain later-comer EMEs' OFDI activities has been asked for (Buckley, et al., 2008; Dunning and Lundan, 2008; Mathews, 2001; Moon and Roehl, 2001; Child and Rodrigues, 2005). Here the author asks what aspects of these EMEs actually defy logical priori expectations and how addressing these specific issues may point towards a holistic understanding of their nature and implications. Specifically, to what extent does achieving this require adjustments to traditional resource-based theories? Do we need a new theory to fully encompass a truly radical phenomenon? Or can we comprehend this new phenomenon in the world of international business through reworking of the established resource-based models?

Inspired by Dunning and Lundan (2008), given the limitations of the RBV's explanations of the MNE, an institutional approach, which ties to bridge the macro and

micro levels of analysis and encompasses both formal and informal institutions, offers a promising way to advance our understating of MNEs' heterogeneity. Despite their different assumptions and boundaries, the RBV and IT could be potentially integrated in international business literature as these two theories are complementary and interdependent (Wang et al., 2012). The integration of the RBV and IT could also be justified that despite the vulnerability of their firm specific resources, EMEs internationalize and remain competitive because they have special ownership advantages that derive from embedded home country institutions, and can access various types of support from their home countries. Those institutional advantages, on one hand, assist firms to exploit resources-based advantages more efficiently; on the other hand, work as a supplement to EMEs' resources, affecting their OFDI strategy and performance. However, so far, in spite of the urgent requests and some preliminarily empirical attempts, a theoretical framework that comprehensively incorporates both resource-based and institutional factors to explain MNEs, especially EMEs' OFDI trajectory is still underdeveloped (Oliver, 1997; Brouthers, 2008; Wang et al., 2012; Martin, 2014; Dunning and Lundan, 2008). Tremendous works have stressed the separate roles of resource-based and institutional factors in MNEs' OFDI entry mode choice, investment location decision, and subsidiary performance (Kafouros and Buckley, 2008; Kotabe, Srinivasan, and Aulakh, 2002; Chen, et al., 2009; Lu et al., 2010; Barkema, Bell, and Pennings, 1996; Chung and Beamish, 2005; Delios and Henisz, 2003; Meyer et al., 2013, Johanson and Vahlne, 1977; Ghemawat, 2001; Luo and Shenkar, 2011; Cuervo-Cazurra, 2006; Cuervo-Cazurra and Genc, 2008; Del Sol and Kogan, 2007; García-Canal and Guillén, 2008; Govindarajan and Ramamurti, 2011; Holburn and Zelner, 2010; Hoskisson et al., 2013; Luo and Wang, 2012), but it is not clear what the boundaries and limitations of the RBV and IT are in an international business context. Can they be integrated? If so, how can they be integrated to explain/predict MNEs', especially EMEs' OFDI trajectories (Oliver, 1997; Brouthers, 2008; Wang et al., 2012; Martin, 2014; Dunning and Lundan, 2008)?



Against this research background, the current PhD project aims to stress the above research gaps and extend existing theoretical and empirical literature (e.g., Peng, 2008 and 2009; Dunning and Lundan, 2008; Oliver, 1997; Brouthers et al., 2008; Wang et al, 2012) by answering the following research questions:

1. What are the firm-level boundaries and limitations of the resource-based view and institutional theory in an international business context? What are the integration mechanisms of the RBV and IT, and why and how can they be integrated in explaining MNEs' outward direct investment?
2. What are the respective roles of resource-based and institutional factors, and MNEs' strategy in EMEs' productivity growth from OFDI?
3. How do resource-based and institutional factors jointly determine MNE subsidiaries' bribing strategy in host countries?
4. How do resource-based and institutional factors integrate to moderate the effectiveness of MNE subsidiaries' bribing strategy on financial performance?

Specially, chapter 1 of this thesis introduces the research background, research questions, thesis structure and potential theoretical and empirical contributions.

Chapter 2 will concentrate on theory building. In this chapter, the author aims to fill in the gaps by developing a new model in line with the integration of the RBV and IT to comprehensively explain MNEs' OFDI strategy and performance. Following Yan and Grey's (1994) analytical induction approach, the author firstly offers a model that synthesizes past literature on how the RBV and IT have been applied to MNEs' OFDI research. The author then uncovers this model's shortcomings and extends it toward a

new model that carefully incorporates both separate and integrative characters of the RBV and IT to predict international business affairs. Different from the previous literature which has attempted to stress the potential combination of resource-based and institutional factors (Martin, 2014; Dunning and Lundan, 2008; Oliver, 1997; Brouthers et al., Wang et al., 2012), this chapter goes further via identifying the mutual moderating effect of resource-based and institutional factors on MNEs' OFDI (Brouthers, et al., 2008; Martin, 2014) and elaborating the firm-level integration mechanisms of resource-based and institutional constructs in an international business context (Oliver, 1997; Wang et al., 2012). Furthermore, the model the author proposes in this chapter will incorporate a new concept "institution-based resources", capturing both institutions' indirect enabling role and direct supplying role in MNEs' formulation of specific resources. This concept helps explain why traditional international business theory cannot fully explain EMEs' internationalization practices (Buckley et al., 2007; Buckley et al., 2008).

Chapters 3 to 5 will be empirical studies aiming to test the model proposed in chapter 2 using a step-by-step approach. As Andersson, Cuervo-Cazurra, and Nielsen (2014) have strongly recommended, in the case of explaining interactions within the same level of analysis, scholars need to firstly provide an explanation of the mechanisms that link the main independent variable to the dependent variable, and then explain how the interaction variable modifies these mechanisms. Thus, although this thesis mainly contributes by identifying the integrative role of resource-based and institutional factors in moderating each other's effects on MNEs' OFDI, chapter 3 will test the baselines of the new model, i.e. test the direct and separate roles of resource-based factors, institutional factors, and MNEs' strategy in MNEs' OFDI performance. Resource-based factors, institutional factors and OFDI strategies could influence MNEs' performance (Kafouros and Buckley, 2008; Kotabe, Srinivasan, and Aulakh, 2002; Chen et al., 2009; Lu et al., 2010; Barkema, Bell and Penning, 1996; Chung and Beamish, 2005; Delios

and Henisz, 2003; Meyer et al., 2013), but the testing results of their effects in previous literature are inconstant, probably because of a lack of careful consideration of MNEs' heterogeneity in resource and institutional conditions (Herzer, 2011), or proper control of MNEs' endogenous self-selection bias (De Locker, 2007; Inui, and Todo, 2007; Hijzen, Jean, and Mayer, 2011). Instead of a simple examination of the general effect of MNEs' OFDI on MNE performance (Bitzer, and Kerekes, 2008; De La Potterie and Lichtenberg, 2001), chapter 3 tries to fill in the research gaps not only by comprehensively examining different effect of resource-based factors, institutional factors and strategy on MNEs' performance, but also by a careful consideration of MNEs' self-selection bias and employment of more sophisticated performance measurement. As productivity growth guarantees MNEs' sustainable performance, the author chooses MNEs' productivity gains from OFDI as the measure of performance (Wang et al., 2012), and thus narrows the sample set down to EMEs as EMEs are more sensitive to productivity change from OFDI and whether they can gain productivity premium via OFDI is still under debating (Barba Navaretti and Castellani, 2004; Bitzer and Kerekes, 2008; De La Potterie and Lichtenberg, 2001; Driffield and Chiang, 2009; Herzer, 2011; Hijzen, Inui, and Todo, 2007; Masso and Vahter, 2008). A methodology combining the propensity-score matching and difference-in-difference (DID) will be adopted in this chapter to control for EMEs' self-selection to the global investment market, and unique data on Chinese manufacturing firms over the sample period 2002-2008 are deployed to test theoretical framework with hypotheses.

Chapter 4 examines the joint role of resource-based and institutional factors in MNEs' OFDI strategy formation. Given the global pervasiveness of government corruption, it is inevitable that MNEs will encounter corrupt requirements in host countries, and bribing has been identified to be a possible informal strategy that MNEs will have to carefully consider in host counties (Galang, 2012; Birhaun, Gambardella, and Valentini, 2015).

However, existing literature on the determinants of MNEs' bribing strategy is very limited (Galang, 2012). Thus, specially, this chapter attempts to investigate how institutional and resource-based factors jointly determine MNEs' strategies via testing the joint role of MNEs' home-of-origin, home country institutional pressures, and the holding of resources in determining an MNE subsidiary's bribing strategy. The theoretical framework and hypotheses are tested using firm-level data from the World Bank enterprise surveys from 2006 to 2012, with a total of 2210 MNE subsidiaries in the final sample. Both the Tobit model and Heckman two-step approach are employed to carefully tackle MNE subsidiaries' potential self-selection to bribe.

Employing both OLS and instrumental variable regressions, chapter 5 will investigate how resource-based and institutional factors integrate to moderate the effectiveness of MNE subsidiary's strategy on financial performance, based on firm-level data from the World Bank enterprise surveys. Brouthers et al. (2008) argue that MNEs' entry strategy that incorporates both resource-based and institutional factors can produce better subsidiary performance. While they recognize the institutions' moderating effect on MNEs' resource exploitation, they seem to ignore resources' reverse moderating effect on MNEs' confronted institutional pressures. This chapter will fill in the gaps by integrating the RBV and IT to generate an integrative model, and illustrating how resource-based and institutional factors integrate to moderate strategy's effectiveness on MNE subsidiaries' performance. To the author's best knowledge, this is the first study that employs integrative theoretical framework, firm-level data, and appropriate estimation methods to investigate who exactly benefits from bribing (Birhanu et al., 2015; Spencer, and Gomez, 2011).

Chapter 6 summarizes the key findings and stresses theoretical contributions of the thesis. Managerial implications of the findings and main limitations of the thesis and possible areas for future research are discussed.

## 1.2 Potential Contributions

This thesis aims to develop a new model integrating the RBV and IT to explain MNEs, especially EMEs' OFDI strategy and performance, and then test the model, employing fine data sets and sophisticated estimation techniques.

A few studies have attempted to stress the possible relationships between resource-based and institutional constructs, e.g., Oliver (1997), Dunning and Lundan (2008), Brouthers et al., (2008), and Wang et al., (2012). However, although institutions' role in affecting firms' competitive advantages has been recognized (Oliver, 1997; Martin; 2014), whether and how we should integrate the RBV and IT in MNE research remains to be research gaps (Oliver, 1997; Dunning and Lundun, 2008; Brouthers et al., 2008; Martin, 2014). Oliver (2008) emphasises that institutional capital and resource-based capital jointly formulate firms' sustainable advantages. However, his research focuses on firms operating in one single institution, and hence needs to be extended to study MNEs. Dunning and Lundan (2008) emphasize the crucial role of institutional factors in international business theory, and try to incorporate institutional factors into the OLI model, but as their arguments are trying to distinguish the ownership advantages MNEs developed from resources or institutions, the interdependence and integration of resource-based advantages and institutional advantages have been neglected. How EMEs gain special competitive advantages from the integration of home institution and their own specific resources has not been referred to. Martin (2014) points to the interaction of institutional factors in formulating MNEs' competitive advantage, but again, his attempt has not successfully provided answers to EMEs' sources of competitiveness. Brouthers et al.'s (2008) empirical results suggest that taking institutional factors into consideration when MNEs' making OFDI strategies as institutions can moderate resources' role on performance. But the above studies ignore the possible reverse moderating effect of

resource on institutions. Wang et al., (2012) refer to the integration of the RBV and IT, and examine how government affiliation levels integrate with EMEs' resources to determine their OFDI. But traditionally, the RBV and IT has contradictory assumptions, so why and how can they be and should they be integrated? What are the mechanisms of their integration for predicting MNEs' international activities? These have not been clearly explained. The author contributes to the literature by answering these questions. In chapter 2, the author synthesizes past literature on applications of the RBV and IT in international business study, and then goes further to identify the limitations of the RBV and IT, and investigates the boundaries, overlaps and integration mechanisms of them. At the same time, the author develops the concept "institution-based resources", which sheds lights on explaining why traditional resource-based theories cannot explain MNEs', especially EMEs, internationalization activities. After that, based on the analyses of the integration of the RBV and IT, the author develops a new model, combining the roles of resource-based and institutional factors to predict MNEs' OFDI trajectories in a more comprehensive way.

The empirical studies from chapters 3 to 5 also provide new insights into the underlying mechanisms of the MNEs' heterogeneity in OFDI strategies and performance. These three empirical studies not only assist in testing the model in chapter 2, but also contribute significantly in their specific areas. Via investigating how EMEs' state ownership status, absorptive capability, entry mode, and entry destination influence EMEs' productivity gain from OFDI, the author tests the baseline of the model in chapter 2, i.e. the impact of resource-based factors, institutional factors, and entry strategy on MNEs' OFDI performance. Existing literature has stressed OFDI's impact on developed countries' exports, investments and employment, and special features of OFDI from emerging economies (Bitzer and Kerekes, 2008; Chen and Yang, 2013; Chuang and Lin, 1999; De La Potterie and Lichtenberg, 2001; Herzer, 2008, 2010, 2011; Kogut and Chang, 1991; Pradhan and Singh, 2008; Buckley, et al., 2007; Buckley, Tan,

and Xin, 2008; Herzer, 2011; Luo and Tung, 2007). However, the results on OFDI's impacts on EMES' firm-level productivity growth is inconclusive (Herzer, 2011; Zhao, Liu, and Zhao, 2010). The author argues that this inconsistency derives from a lack of consideration of EMES' resource-based and institutional heterogeneity, absent of careful control of EMES' endogenous self-selection bias and suitable measurement methods of firm-level productivity (De Loecker, 2007; Hijzen et al., 2007; Hijzen, Jean and Mayer, 2011). Thus, to remedy the above problems, this chapter shed lights not only by examining the general impact of OFDI on EMES' productivity, but also by investigating how resource-based factors and institutional factors affect the productivity premium EMES can gain from OFDI. Carefully capturing EMES' heterogeneity in resource and institutional conditions helps explain the inconsistency of previous testing results. In addition, the author captures the 'real' impact of OFDI by carefully controlling for EMES' endogeneity of productivity change, employing a method that combines the propensity score matching and difference-in-difference (DID) approaches (Arnold and Javorcik, 2005). Furthermore, when measuring EMES' productivity change, the author augments the traditional Olley and Pakes's (1992) semi-parametric approach to measure EMES' TFP. The author introduces an OFDI dummy and export dummy in the production function, which allows for different production estimation functions for EMES with various export and OFDI status. The augmentation of Olley and Pakes's (1992) semi-parametric approach will help us not only efficiently control for the possible simultaneity and selection biases (Olley and Pakes, 1992), but also successfully remove the potential productivity estimation bias from omitting influential variables in the production function estimation (De Loecker, 2011; De Loecker, Goldberg, Khandelwal, and Pavcnik, 2012).

Chapters 4 and 5 provide new insights into international business literature by testing the joint role of resource-based factors and institutional factors in determining MNEs' strategy, and then the integrative role of resource-based and institutional factors in

moderating the effectiveness of MNEs' strategy on performance using the World Bank enterprise surveys data. Although there are studies referring to influential factors of bribery (Martin et al, 2007; Collins et al, 2009; Spencer and Gomez, 2011; Jeong and Weiner, 2012), so far, little is known about the role of MNEs' bribery on their performance. Given the pervasiveness of government corruption, it is urgent and important to know who actually are paying bribes, and who benefit from bribing (Spencer and Gomez, 2011). To the author's best knowledge, these two chapters represent the first attempt that combines the RBV and IT to analyse the determinants and impacts of MNE subsidiaries' bribing strategy. The author identifies that MNE subsidiary's resources and confronted pressures of corruption in host countries are mutually affected. Thus the determinants and impacts of MNE subsidiaries' bribing strategy should be evaluated under careful considerations of the integration of resource-based and institutional factors. These two chapters will make great theoretical and managerial contributions via opening the black box of MNEs' bribery in host countries, and generating valuable managerial implications for MNEs by advising them how to deal with bribery requests based on their holding of resources and confronted institutional pressures and gain sustainable success. Except for this, the author uses firm, rather than country- level data, which provides us with an opportunity to investigate the micro mechanisms by which MNEs' heterogeneity matters (Birhaun, et al. 2015). In addition, the measure of MNE subsidiaries' bribery in this work is valuable, as it is the actual statistic provided by the respondents when they answered by the question set by the World Bank enterprise surveys that "What percentage of your annual sales has been paid to government officials as informal payments?" Finally, the author contributes by deploying the Heckman-two step model to tackle MNE subsidiaries' self-selection to bribe and utilizing instrumental variable regression based on fitted extent of MNE subsidiaries' bribery to investigate bribing's real effectiveness on MNE subsidiaries' performance (Birhanu, Gambardella and Valentini, 2015).



## **Chapter 2: Integration of the Resource-based View and Institutional Theory to Explain MNEs' OFDI Strategy and Performance: A Theory**

### **2.1 Introduction**

The RBV suggests that MNEs' internationalization strategy and performance differ according to the heterogeneity of MNEs' holding of resources, such as marketing and technological resources (Kafouros and Buckley, 2008; Wang, Hong, Kafouros, and Wright, 2012). In the international business context, firm resources have been designated as MNEs' ownership advantage (O) in Dunning's eclectic framework (Dunning, 1988; Dunning and Lundan, 2008a) and as firm-specific advantages in the firm-specific advantages/country-specific advantages matrix (Rugman, 1981; Rugman and Verbeke, 2001a, 2001b). However, rather than treating the variation in resource positions as the only explanatory variable, recently scholars argue that differences in MNEs' internationalization trajectories can lie in their embedded institutional conditions, including both home and host country institutional environments (Buckley et al., 2007; Mike, Sunny, Brian, and Hao, 2009; Wang et al., 2012). This is especially for EMEs, whose OFDI strategy and performance are significantly affected by institutional factors such as low institutional development in home countries (Hoskisson, Wright, Filatotchev, and Peng, 2013), special home country institutional embeddedness advantages (Cuervo-Cazurra and Genc, 2008), strong government influences (Luo, Xue, and Han, 2010; Peng, Wang, and Jiang, 2008), and capital market inefficiencies (Buckley, Tan, and Xin, 2008).

So far, some studies have recognized the joint role of institutional and resource-based factors on firms' competitive advantages and performance (Oliver, 1997; Wang et al., 2012). Oliver (1997) proposes a process model combining the insights of the RBV and IT to explain firm-level heterogeneity. This model argues that a firm's sustainable advantage depends on its ability to manage a specific institutional context of resource decisions. But this framework is

built based on firms' operation in one single institutional context. Therefore its explanation power for MNEs, who are operating across national boundaries, is limited. Dunning and Lundan (2008a) emphasize the importance of institutional factors in international business research and demonstrates how institutional analysis can be incorporated in to the OLI model. In their model they distinguish between the institutional ownership advantages (Oi) and asset-based ownership advantages (Oa). But Dunning and Lundun (2008a), on one hand, have not captured the effect of EMEs' special institutional Oi on their internationalization; on the other hand, ignore the integration of Oi and Oa. Brouthers et al. (2008b) confirm that adding the moderating effect of national institutional environment to a resource-based perspective better explains the effectiveness of strategic decisions in an international business context, than does a mere resource-based approach. But they only emphasize institutions' one-way moderating effect, and have not mentioned that firm resources could also reversely moderate the role of institutions in the strategy-performance nexus. Similarly, Martin (2014) neglects the mutual moderating effect of institutions and resources on MNEs' specific advantages. Martin (2014) develops a concept of institutional competitive advantages, emphasizing an MNE's interaction with institutions over its life cycle. However, the integration of institutional factors and resource-based factors has not been referred to, let alone how this combination works better to predict EMEs' strategy and performance. Wang et al., (2012) examine how the integration of MNEs' resources and government affiliation level affects OFDI investment, but they have not theoretically discussed why the RBV and IT should be integrated and how they could be integrated. Although institutional and resource-based constructs are argued to be complementary and interdependent when explaining MNEs (Wang, et al., 2012; Martin, 2014), so far, the literature about their integrative mechanism is very limited. This integrative approach based on the RBV and IT is especially meaningful for research on EMEs, as EMEs' dramatic amount of OFDI started long before they have accumulated enough firm specific resources (Oa), or have been endowed with enough Oi from well-developed home country institutional infrastructure (Luo and Tung, 2007). Why do EMEs invest abroad? How do they compete with developed

market MNEs (DMNEs) in global markets? Do we need a new international business theory to explain EMEs' internationalization trajectories? To address these related questions the author provides a new theoretical framework integrating the RBV and IT, to fill in the research gaps in successfully explaining both DMNEs and EMEs' OFDI activities.

Aiming to extend the RBV and IT in an international business context, this chapter discusses the firm-level boundaries, limitations and the integrative mechanisms of the RBV and IT in international business literature, to better explain/predict MNEs' OFDI strategy and performance. Propositions are thus developed in line with the integration of the RBV and IT to explain (a) what the firm-level boundaries and limitations of the RBV and IT are and how they could be integrated in international business research; (b) how the integrated framework explains MNEs' internationalization strategy and performance.

Following an analytical induction approach (Yan and Gray, 1994), the author will firstly offer a model that synthesizes past research on the role of the RBV and IT's in MNEs' OFDI. Employing this model as a benchmark, the author uncovers its limitations and then extends it via a discussion of the integration of both theories, to explain why and how an integrative approach of the RBV and IT is better applicable to answering research questions about MNEs, especially EMEs' internationalization.

The author argues that, the RBV and IT perspectives not only complement, but also interact with each other. MNEs select, accumulate and formulate firm-specific resources in home country institutional environments, and in IB, variations of MNEs' embedded home country institutional environments contribute to the heterogeneity of their specific resources. Incorporating both institutions' indirect enabling role and direct supplying role of firms' formulation of resources, we propose a new concept "institution-based resources", which helps explain why traditional international business theory cannot fully interpret EMEs' internationalization practices (Buckley et al., 2008). In addition, the author argues that value and applicability of MNEs' resources vary upon institutions. Institutional and resource-based

factors moderate each other's effect on MNEs' internationalization strategy and performance.

Following the integration of the RBV and IT, the author develops an extended model for MNEs' OFDI strategy and performance. The author firstly confirms previous literature that institutional and resources-based factors have separate effects on MNE OFDI's strategy and performance. Nevertheless, the author further argues that they jointly determine MNE OFDI's strategy and interactively moderate the impact of EMEs' OFDI strategy on performance.

The rest of this chapter is organized as follows. The next two parts will review the RBV and IT, and their applications in international business research. After that, the boundaries and limitations of the RBV and IT in an international business context are discussed, in response to the call for an integrative approach based on these two theories. A diagram will be presented here which synthesizes previous arguments on the role of the RBV and IT in MNEs' OFDI strategy formation and performance. Fifthly, the author will analyze the integrative mechanism of the RBV and IT, based on which a new model is proposed for better predicting EMEs' OFDI activities. Finally, section six offers discussion and conclusion.

## **2.2 The RBV and its applications in international business research**

Traditionally, the RBV assumes that a firm's competitive advantage is a function of a bundle of firm-specific resources that are rare, valuable, and hard to imitate. Resource endowments are usually not easy to transfer and are distributed unevenly, so that the firm's competitive advantages derive from its possessing and using of these varying resource combinations (Barney, 1991). The basic argument of the RBV thus is that, specialized, rare, inimitable resources and resource market imperfections lead to the inter-firm heterogeneity, and successful firms are those that are adept at exploiting current resource-based advantages and

exploring new resource-accumulating opportunities (Gupta, Smith, and Shalley, 2006; Tsang, 2000).

### **2.2.1 Applications of The RBV in international business research**

Since in the early of 1990s, the RBV has gained tremendous influence in international business literature (Peng, 2001). For the application of the RBV in international business, most scholars hold the opinion that the variation in MNEs' internationalization strategy and performance is a function of interfirm resource heterogeneity. R&D, for example, enables MNEs to develop innovative technologies and thus differentiate themselves from global rivals (Kafourous and Buckley, 2008). Marketing resources, on the other hand, enable MNEs to differentiate their products and create barriers to entry (Kotabe, Srinivasan, and Aulakh, 2002). MNEs' resources, which are difficult to imitate, involve higher levels of specificity (Dierickx and Cool, 1989) and contribute a lot to MNEs' International competition. A key assumption of the RBV in international business research thus is that although MNEs' OFDI decisions are constrained by causal ambiguity and information asymmetry, they are driven by exploitations of firm specific resources and competitiveness (Insead and Chatain, 2008).

A popular research direction in an international business context is applying the RBV to analyze MNEs' operation in emerging economies. For instance, Brouthers, Brouthers, and Werner (2008a) examines How do resource advantages or needs influence MNEs' OFDI strategies. Chen, Park, and Newburry (2009) investigates how variations of resource contribution by parent firms influence the control mechanism they choose in international joint ventures.

But research on EMEs has significantly broadened and deepened RBV while raising new puzzles (Meyer, 2004; Wright, Filatotchev, Hoskisson, and Peng, 2005). The RBV provides a basis to explore how resource demands propel EMEs to internationalize. One question is what EMEs may be able to exploit abroad when they typically are technologically less

advanced. A second question concerns how EMEs acquire complementary resources abroad to overcome their competitive disadvantages (Zhou, Bruton, and Li, 2010; Luo and Tung, 2007). For the first question, Mesquita and Lazzarini (2008) suggest that collective efficiencies help EMEs to get access to global markets. At the same time, Gubbi, Aulakh, Ray, Sarkar, and Chittoor (2010) analyze how international merge and acquisitions enable EMEs to acquire hard-to-trade resources, which are often embedded in target firms from developed economies. However, some scholars try to answer the above questions by proposing arguments that EMEs' OFDI are initially motivated by asset augmentation. To improve international competitiveness, EMEs are likely to enter developed economies to explore new resources and capabilities (Wright et al., 2005). Learning theory associated with the RBV has also been applied to explain EMEs' OFDI to developed countries (Cohen and Levinthal, 1990). EMEs are likely to be at a disadvantage in global markets relative to DMNEs. Thus, to quickly obtain globally competitive knowledge-based resources, EMEs might be forced to enter developed countries to acquire cutting-edge technological capabilities. Cantwell (1994) and Dawar and Frost (1998) suggest that Samsung, a large Korean business group, located its R&D facilities in Silicon Valley, seeking to gain advanced technology in memory chips. Once acquiring the expertise, Samsung transferred that capability back to Korea quickly. Such international exploration via knowledge acquisition and absorption allows EMEs to accumulate firm-specific resources quickly and thus enhance their long-term performance (Frost, 2001). Accordingly, EMEs often use international exploration not to achieve better near term performance but to develop potential absorptive capacity (Shaker, Zahra and George, 2002). However, as the real effect of resource absorption and accumulation via resource-seeking OFDI could be lagged, how EMEs without abundant resources formulate competitive advantages, and guarantee their near term performance? The RBV alone cannot answer this question.

### **2.3 IT and its applications in international business research**

IT suggests that firms are operating within the social frameworks of norms, values, and taken-for-granted assumptions about what constitutes acceptable and appropriate economic behavior (Scott, 1987). Firms' strategic choices thus are constrained not only by the informational, technological, and income limits that neoclassical models have emphasized but by socially constructed limits like customs, norms, and habits. Under the guide of certain social conventions, individuals and firms are supposed to be approval seeking, susceptible to social influences and intractable habit and tradition (Scott, 1995a; Zucker, 1987). At the individual level, managers' habits, norms, and unconscious conformity to traditions explain firms' activities (Berger, Luckmann, and Zifonun, 2002). At the firm level, shared value systems, corporate culture, and political processes support firms' ways of institutionalized structures and behaviors. At the inter-firm level, isomorphic pressures that stems from industry, government, and societal expectations (e.g., the rules, norms, and standards on occupational safety, product quality, or environmental management) define socially acceptable firm activities, and those social pressures applied to all firms in the same institution cause firms to exhibit similarly (DiMaggio and Powell, 1983).

Following IT, conformity to social expectations contributes to firms' survival and success (Baum and Oliver, 1991; Carroll and Hannan, 1989; DiMaggio and Powell, 1983; Oliver, 1991). Different from economic frameworks, which investigate the extent to which firm behavior is economically justified and rational, theorists following IT emphasize the extent to which firm behavior is habitual, compliant, unreflective, and socially defined (Oliver, 1997). Thus the basic assumption of IT is that firms' tendencies toward conformity with taken-for-granted and predominant traditions, norms, and social influences in their internal and external institutional environments lead to inter-firm homogeneity in structures and behaviors, and that successful firms are those that gain legitimacy and support by conforming to social isomorphic pressures.

### **2.3.1 Applications of IT in international business research**

While the rise of new institutionalism has been found throughout the social sciences since the 1970s, IT's ascendance as a leading perspective in international strategy is a more recent phenomenon (Wan and Hoskisson, 2003). In international business literature, IT suggests that MNEs' activities are guided by institutional factors, which have been defined as regulative, normative, and cognitive structures (Scott, 1995a). Three types of institutional isomorphism - coercive, normative, and mimetic isomorphism shape firm behavior (DiMaggio and Powell, 1983). Hence, while the RBV suggests that MNEs' internationalization decisions are economically justified, and depend on idiosyncratic resources, IT argues that such decisions are outcomes of institutional influences, including political influences and internal and external isomorphic pressures. The determinants of MNEs' OFDI extend beyond economic optimization and strategic justification to forces shaped by legal, and social rules, and by the broader political background surrounding the decision to internationalize (Oliver, 1997; Peng et al., 2008).

Traditional adoption of IT in international business research lies in the analyses of MNEs' operation in emerging economies. A characteristic of emerging economy is institutional transitions defined as 'fundamental and comprehensive changes introduced to the formal and informal rules of the game that affect organizations as players' (Peng, 2003:275). Not surprisingly, research on emerging economies has propelled IT to be a leading edge research perspective (Meyer and Peng, 2004; Peng, 2000). Representatives of IT-based studies, sometimes in combination with the RBV and TCT, include Delios and Henisz (2000) and Meyer (2001) on capabilities and experiences in unfamiliar environments in emerging economies, Brouthers and Brouthers (2001) on roles of institutional and cultural distances affecting MNEs' entry decisions, Fey and Björkman (2001) on international human resource management practices in host countries, and Meyer (2004) on MNE inward FDI's spill-over effects in emerging economies.

Another question that has usually been explained by IT is how host country institutional



environments, and the differences between home and host institutions, impact location or mode choices of the MNE (Meyer, 2001; Xu and Shenkar, 2002). Theoretical arguments and empirical evidence, however, are inconsistent. On the one hand, it is said that more efficient institutions and less corruption reduce the need for local networks and knowledge, which stimulates foreign investors to choose wholly owned subsidiaries over joint ventures (Meyer, Estrin, Bhaumik, and Peng, 2009). On the other hand, better institutions reduce the costs of legal enforcement, and hence the costs of resolving conflicts between joint venture partners, thus making joint ventures more viable (Dikova and Van Witteloostuijn, 2007). Empirical and theoretical inconsistencies imply that other theories need to be integrated with IT to jointly explain this phenomenon.

A new trend of IT in international business research is applying IT to EMES' OFDI. Scholars argue that home country institutions and institutional changes shape the behavior of EMES and confer an advantage/disadvantage for them in international competition. For instance, Del Sol and Kogan (2007) find that Chilean companies operating in Latin America are more profitable than local firms because of their exploitation of knowhow accumulated during pioneering home country economic reforms. This case also suggests that EMES may attain competitive advantages in least developed countries where they face competitors from developed economies with sophisticated technologies but less experience with poor institutions (Cuervo-Cazurra and Genc, 2008), as internationalization performance is supposed to differ according to the extent that MNEs' resources are transferable to a given host country institutional situation (Luo and Peng, 1999). Similarly, Lee and Beamish (1995) suggest that Korean firms face lower knowledge gaps in emerging economies as these countries present institutional and economic contexts that are similar to their own home country background. Pananond and Zeithaml (1998) find that Charoen Pokphand Group, which is Thailand's largest multinational business group, is easy to exploit its resources successfully in other emerging economies like Hong Kong, Indonesia, Singapore, and mainland China. It is possible to successfully achieve economies of scale in these above

emerging economies than seek to compete in developed markets. Charoen Pokphand Group has competitive advantages in emerging economies as competitors from developed countries may find it hard to change their business models when operating in emerging markets (Prahalad and Lieberthal, 1998). As such, EMEs competing in emerging economies may cause the DMNEs to compromise their global identity (Dawar and Frost, 1998).

## **2.4 A summary: limitations and boundaries of the RBV and IT in international business context – the call for and possibility of an interactive approach**

### **2.4.1 Limitations of the RBV in international business research**

The RBV of strategic management argues that firms' resources and capabilities enable them to generate competitive advantages and above-normal rents of return. Firm-level heterogeneity in exploiting imperfect markets and acquiring strategic resources accounts for the variations of the firms' gain of extra economic rents (Barney, 1986; Dierickx and Cool, 1989; Mahoney and Pandian, 1992; Wernerfelt, 1984; Amit and Schoemaker, 1993; Barney, 1991). However, notwithstanding its valuable insights, the RBV has not looked beyond the properties of resources and imperfect resource markets to explain enduring firm heterogeneity (Oliver, 1991; Peng et al., 2008). In particular, the RBV has not investigated the institutional context (e.g., firm histories, network ties, traditions, and embedded macro institutional environment) within which resource selection decisions are made and how the institutional contexts affect firms' sustainable differences (Ginsberg, 1994). Nor has the RBV addressed firms' resource selection processes, that is, how firms make, and fail to make, rational resource choices in pursuit of economic rents under certain institutional context. Accordingly, Barney (2001) himself recognizes the important limit to the RBV's applicability as it only holds as long as the 'rules of the game' in an industry remain relatively fixed. Thus in IB where each research unit is multi-boundaries, we need to go beyond the RBV to explain their competitive advantages and their corresponding internationalization

activities.

Secondly, resources determine firms' strategy and performance, but value of resources differs across institutions. Being utilized in explaining international business affairs, the RBV has been criticized for its "little effort to establish appropriate contexts" (Priem and Butler, 2001). Rare, valuable, and hard-to-imitate resources and capabilities in one context might be plentiful, non-valuable, and easy to imitate in other contexts (Oliver, 1997; Brouthers et al., 2008b). For instance, Dell's intangible resources in "flexible manufacturing" of PCs add value when competition is moderately dynamic. But under the new context of high-speed dynamic competition, Dell's capabilities of "flexible manufacturing" turns out to be not flexible enough (Scheck, 2008). The profound differences between emerging economies and developed countries force scholars to pay more attention to look beyond the RBV (Zacharakis, McMullen, and Shepherd, 2007). Recent research on the determinants of MNE subsidiary performance has documented that as firm specific resources are more critical in explaining MNE subsidiaries' performance in developed markets, in emerging economies, institutional differences turn to be more salient explaining variables (Makino, Isobe, and Chan, 2004). Barney (2001) himself acknowledges the validity of this criticism of the RBV, noting that, "the value of a firm's resources must be understood in the specific market context within which a firm is operating". As many authors simply assume away this problem, they have been failed in developing a more complete theory of international business.

#### **2.4.2 Limitations of IT in international business research**

IT (DiMaggio and Powell, 1983; North, 1990; Scott, 1995a) argues that firms' strategic justifications go beyond pure economic maximization, and firms need to conform to the institutional environment to gain legitimacy and survive. Thus MNEs should invest in host countries that are similar to their home country contexts. However, dramatic EMEs now invest into developed countries to seek strategic assets. Such an EME OFDI phenomenon

could not be fully explained by IT, and other theories need to be incorporated to help address the issue.

Secondly, resource-intensive MNEs do not fully comply with host country institutional environments, but could affect and co-evolve with host country institutions. Following IT, it is the institutional factors that determine firms' strategy and performance, and firms in one institutional context turn to be similar upon isomorphic pressures. However, MNCs' relationships with their institutional environments are dynamic, discretionary, symbolic, and proactive (Cantwell, Dunning, and Lundan, 2010). In contrast to the deterministic IT arguments, MNCs have an important agency role reflected not only in their varying degrees of compliance to host country institutional pressures (Oliver, 1991), but also in that they must make sense of, manipulate, negotiate, co-evolve and partially construct the host country institutional environments (Kostova et al., 2008; Cantwell, Dunning, and Lundan, 2010).

Thirdly, an MNE itself as a context challenges IT. Opposite to traditional theory, the author argues that IT can be used to explain why MNEs that originate from different institutional contexts turn to be heterogeneous, but not similar upon isomorphic pressures. The author looks beyond traditional IT and asserts that in an international business context, as host country institutional pressures force MNEs to be similar, it is the different home-country institutions that contributes to the heterogeneity in their internationalization strategy and performance. An MNE, which originates from fragmented contexts, is also itself a context challenging the IT (Kostova et al., 2008). MNEs formulate their take-for-granted operation and management styles in their home countries. As their home-of-origin differs, MNEs from different countries in one host country differ (Peng et al., 2008). Kostova, Roth, and Dacin (2009) argue that the internal and environmental diversity and complexity of MNEs are such that the concept of organizational field ill fits them, so that MNEs exhibit limited isomorphism with the various environments they face.

Fourthly, beginning with Porter (1980), scholars hold the opinion that firms' competitive

advantages are accumulated in and affected by institutions. Recent work in international business has also recognized this by identifying that MNEs are endowed with specific competitive advantages by home country institutions, e.g., DMNEs are abundant of cutting-edge technology while EMEs are less resource-sophisticated but have advantages when operating countries with similar “difficult” government conditions (Cuervo-Cazurra and Genc, 2008). This kind of institutions’ enabling role of MNEs’ formulation of specific resources/advantages has been confirmed (Martin, 2014), which infers traditional IT’s limitations in recognizing institutions’ role in the development of MNEs’ resources and capabilities. However, the author criticizes that IT ignores not only institutions’ enabling role, but also institutions’ directly supplying role in firm resource formulation. Reorganization of this makes significant sense as it helps explain why and how EMEs compete in global markets. Institutions’ enabling role and supplying role in firms’ formulation of resources will be analyzed in the next section.

#### **2.4.3 Boundaries of the RBV and IT in international business context and the potential for their integration**

The forgoing literature review indicates that previous applications of the RBV and IT make different assumptions and thus suggest different arguments about firm strategy and behavior. The RBV assumes firms are motivated to optimize available economic choices, whereas IT assumes that firms are motivated to comply with external social pressures to gain legitimacy and success. The RBV suggests that factor market imperfections (e.g., factors that inhibit the imitation of resources) increase variation in firms' resources and resource strategies; whereas the IT suggests that external social pressures (e.g., government regulations, public interest groups) reduce variation in firms' structures and strategies.

However, in the international business context, the RBV and IT each have limitations in explaining the research questions. The above analysis contends that the RBV ignores the context within which MNEs select and accumulate resources. Furthermore, value of MNEs’

resources differs across institutional contexts, which infers that MNEs' resource alone cannot fully explain MNEs' internationalization. On the other hand, IT could also be utilized to explain MNEs' heterogeneity (Kostova et al., 2008). As MNEs select and accumulate resources in home country institutional environments, differences of home-of-origin lead to MNEs' differences in holding of resources. Additionally, institutions not only indirectly affect MNEs' formulation of resources, but also directly offer certain MNEs resources. This phenomenon is especially common for EMEs who have close relations with home institutions, and at the same time, whose home countries are in fast economic developing processes thus are urgent to invest abroad.

The author thus concludes that, in the international business research background, either of the RBV and IT has limitations, and both of them have implications for each other. An integration of the RBV and IT can be much more powerful and applicable to tracking MNEs' OFDI activities. Given that the RBV and IT each have their own boundaries, can these two theories be integrated? Is there any overlap of these two theories? More importantly, what are the integrative mechanisms of these two theories?

According to Dubin (1978), a complete theory must contain four essential elements, and one of those is a theory's boundary. A boundary of a theory means that to whom, where and when does the relationship between the variables or constructs in this theory hold (Whetten, 1989). Temporal and contextual factors set the boundaries of generalization, and as such constitute the range of a theory. Theoretically, applications of the RBV and IT have no time limitations. But in international business research, the author argues that the RBV and IT both have contextual boundaries. As what they explain is firms' behavior, they overlap with "who", i.e. MNEs in international business research. Furthermore, different from previous researchers who assert that the RBV explains firms' heterogeneity whilst IT interprets firms' homogeneity, the author now can confirm that in international business research both theories can be employed to explain MNEs' heterogeneity. Following the RBV, MNEs differ because of their holding of rare, specialized, inimitable resources, but according to IT, MNEs

vary upon their embedded institutional environments, especially home country institutional environments (Barney, 1991; Kostova et al., 2008). Additionally, as firms accumulate resources in certain institutional environments, institutions' enabling role of firms' formulation of firm-specific resources thus cannot be neglected, which is a tie of the institution-resource nexus. For EMEs from fast-developing home countries, home institutions even directly supply EMEs with resources, such as capital and information (Buckley et al., 2008). The author names the above resources MNEs gain from institutions' enabling and supplying role as institution-based resources, and the boundaries and overlaps of the RBV and IT in the international business area will be illustrated in the following diagram (Figure 1). A discussion of the boundaries and overlaps of the RBV and IT lays a foundation for the further arguments.

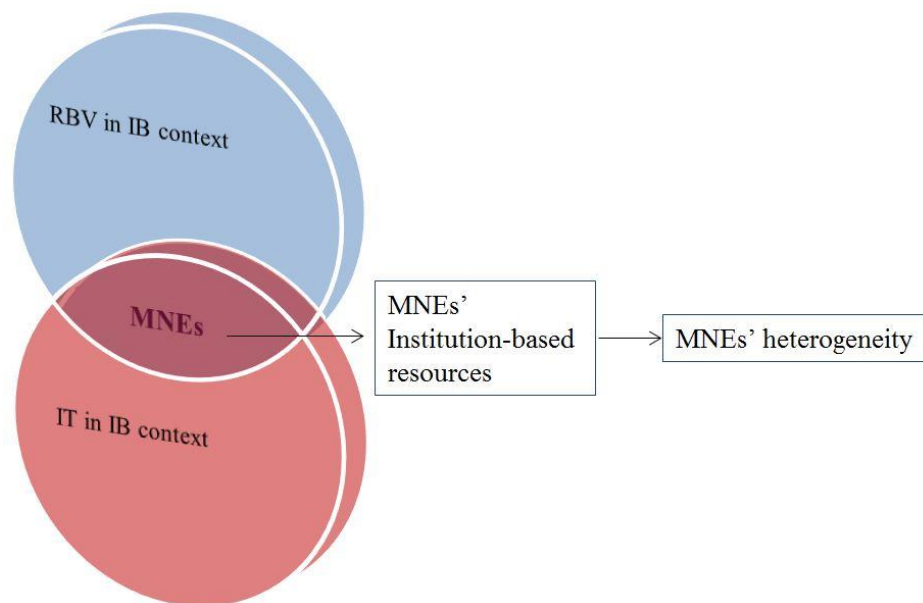


Figure 1: Boundaries and overlaps of the RBV and IT in an international business context

As the boundaries of the RBV and IT overlap with each other and they are actually complementary and interdependent in the international business context (Wang et al., 2012),

the author believes that an integrative approach based on the RBV and IT fits better in international business and is an extension of existing international business theory. However, although the respective roles of the RBV and IT in MNEs' internationalization strategy and performance have long been discussed, the integrative mechanism of the RBV and IT in international business research is still unclear. Literature reviews referring to this have confirmed that rather than treating variation in resource positions and embeddedness in institutional conditions as the separate explanatory variables, differences in MNEs' internationalization can lie in both of them (Peng et al., 2009; Wang et al., 2012; Brouthers et al., 2008b; Dunning and Lundan, 2008a). Peng et al. (2009) confirm that the RBV and industry-based views lack attention to contexts, and they identify the emergence of the institution-based views as a third leading perspective in strategic management, but they have not referred to the integration of resource-based and institutional factors. Brouthers et al., (2008) argue that entry mode strategy based on a model incorporating both resource-based and institutional factors produce better subsidiary performance. But they emphasize institutions' moderating role in the effect of resources, a reverse moderating effect from resources to institutional conditions has been neglected. Dunning and Lundan (2008) have also tried to tie institutional analysis into the OLI paradigm. Although they recognize the existence of Oi (institutional ownership advantages), they have not successfully distinguished between Oa (asset-based ownership advantages) and Oi, let alone the integration of Oa and Oi. Wang et al. (2012) refer to an integrative approach of the RBV and IT, but the mechanisms about why and how they are integrated are missing. Recently, Martin (2014) proposes a concept of institutional advantage, emphasizing firms' interaction with institutions. He recognizes institutions' enabling role in firms' formulation of resources which can be developed as firms' competitive advantages. But Martin ignores that institutions can not only enable firms to accumulate resources, but also supply them with resources directly. This might be uncommon in developed countries, but is an evident phenomenon for EMEs, accompanied by the fast economic development of their home countries. Key readings about the limitations of RBV and IT and the need of the integration



between them have been summarized in the following Table 1.

Based on the literature review, the author concludes that so far, an agreement has been reached that resource-based and institutional factors have their respective effect on MNEs' OFDI strategy and performance. Apart from that, resources' role in MNEs' OFDI can be moderated by institutional contexts (Brouthers et al., 2008). Furthermore, as firms select and accumulate firm-specific resources in institutions, MNEs are endowed with institutional advantages derived from their embeddedness in institutional environments (Martin, 2014). However, a framework that comprehensively explains how the RBV and IT separately and interactively predict MNEs' internationalization strategy and performance is still under developed. The author illustrates the past research results about the separate and joint role of RBV and IT on MNEs' internationalization in Figure 2. Then, in line with Yan and Grey's (1994) analytical induction approach, the author extends this model to a more applicable theory, via the following discussion of the integrative mechanism of resource-based and institutional constructs, with the propositions followed.

Table 1: Limitations of RBV and IT in IB research and the need for an integrative approach: A summary of key readings

Authors	Topic	Primary theoretical approaches	Data and context	Analytical techniques	Main findings
Kostova, Roth and Dacin (2008)	Institutional theory in the study of multinational corporations: A critique and new directions	Institutional theory	NA	NA	The MNE as a challenge to neoinstitutional theory. There is limited institutional isomorphism in MNEs. MNEs engage in actor-specific manipulation and negotiation of their status aimed at social construction of their acceptance and approval in both home and host countries. Achieving legitimacy in this context makes MNEs less, not more, similar.
Saka-Helmhout, Deeg and Greenwood (2016)	The MNE as a challenge to institutional theory: Key concepts, recent developments and empirical evidence	Institutional theory	NA	NA	MNEs are experiencing dilemmas as they face multiple and contradictory institutional demands. Foreign subsidiaries confront the need to maintain legitimacy within both the host country and the MNE. But the connection between multiple, and often contradicting institutional pressures, and organizational responses that capture actor's ability to maintain or change institutional arrangements, has not received systemic attention. On the other hand, institutions can also have an enabling role that can lead to enhances in an MNE's competences. Multiple institutional embeddedness present MNEs with both opportunities and challenges. MNEs can tap into resources and capabilities from multiple local contexts and integrate them to create competitive advantages.
Peng, Sun, Pinkham and Chen (2009)	The institution-based view as a third leg for a strategy tripod	Resource-based views; Industry-based views; Institution-based views	NA	NA	Resource-based views have limitations in IB research for its little effort to establish appropriate contexts. An Institution-based view could be used as the third leg of a strategy tripod, which overcomes the long-standing criticisms of the industry based and resource-based views' lack of attention to contexts, and contributes significant new insight.
Dunning and Lundan (2008)	Institutions and the OLI paradigm of the multinational enterprise	Resource-based view; Institutional theory; OLI model	NA	NA	Institutions' role should be incorporated into the OLI paradigm to explain MNEs' formulation of ownership advantages. The content and structure of the O-specific advantages of a particular firm, including those which are country specific, may critically affect how particular resources and competences are created, accessed or deployed. There are three different kinds of Ownership advantages, including institutional ownership advantages (Oi) that incorporates the firm-specific norms and values guiding decision-making, as well as an imprint of the institutional environment (L attributes) of the home country. Such institutional advantages can be transferred (intentionally or unintentionally) alongside other ownership advantages to host countries.

Martin (2014)	Institutional advantage	Institutional theory	NA	NA	The concept 'institutional competitive advantage' is developed. A firm is argued to have an institutional competitive advantage when it is implementing a strategy, featuring distinctive resources, and activities enabled by its interactions with the institutional environment, which generates economic value in excess of its competitors. Resource-shaping interaction between firm and institutions is found and institutions' enabling role in firms' resource formulation is emphasized.
Oliver (1997)	Sustainable competitive advantage: combining institutional and resource-based views	Resource-based views; Institutional theory	NA	NA	A firm's sustainable advantage depends on its ability to manage the institutional context of its resource decisions. A process model of firm heterogeneity is proposed that combines the insights of a resource-based view with the institutional perspective.
Brouthers, Brouthers and Werner (2008)	Resource-based advantages in an international context	Resource-based view; Institutional theory	Data collected from survey samples of Dutch, Greek, German, and U.S. firms entering the emerging economies of Central and Eastern Europe (CEE).	Hierarchical logistic regression analysis	Differences in nations' institutional environments influence the applicability of resource-based advantages. For this reason, the effectiveness of such advantages may vary cross-nationally. Adding the moderating influence of national institutional environment to a resource-based perspective better explains strategic decisions (entry mode choice) in an international context than does a mere resource-based approach and decisions predicted by a model incorporating both perspectives yield better subsidiary performance.
Wright, Filatotchev, Hoskisson, and Peng (2012)	Strategy research in emerging economies: Challenging the conventional wisdom	Transaction cost theory; Agency theory; Resource-based theory; Institutional theory	NA	NA	Among transaction cost theory, agency theory, resource-based theory and institutional theory, institutional theory is the most dominant one in explaining emerging economy related IB questions. But there is a need to examine the interaction between institutional theory and other theories.

Peng, Wang and Jiang (2008)	An institution-based view of international strategy: a focus on emerging economies	Resource-based views; Industry-based views; Institution-based views	NA	NA	An institution-based view of IB strategy, in combination with industry- and resource-based views, will not only help sustain a strategy tripod, but also shed significant light on the most fundamental questions confronting IB, such as "What drives firm strategy and performance".
Cuervo-Cazurra and Genc (2008)	Transforming disadvantages into advantages: developing-country MNEs in the least developed countries	Institutional theory	Database of the largest affiliates of foreign firms in 49 least developed countries collected by UNCTAD for the year 1999 and 2001	Tobit model	Developing-country MNEs tend to be less competitive than their developed country counterparts, partly because they suffer the disadvantage of operating in home countries with underdeveloped institutions. But this disadvantage can become an advantage when both types of MNE operate in countries with "difficult" governance conditions, because developing-country MNEs are used to operating in such less developed institutional conditions.
Buckley, Clegg, Cross, Liu, Voss and Zheng (2007)	The determinants of Chinese outward foreign direct investment	The general theory of FDI	Chinese State Administration for Foreign Exchange (SAFE)	Pool ordinary least squares (POLS) and the random effects (RE) generalised least squares method	A special theory is needed to explain the behaviour of Chinese MNEs. Three explanations (capital market imperfections, special ownership advantages and institutional factors) need to be nested within the general theory of the multinational firm.

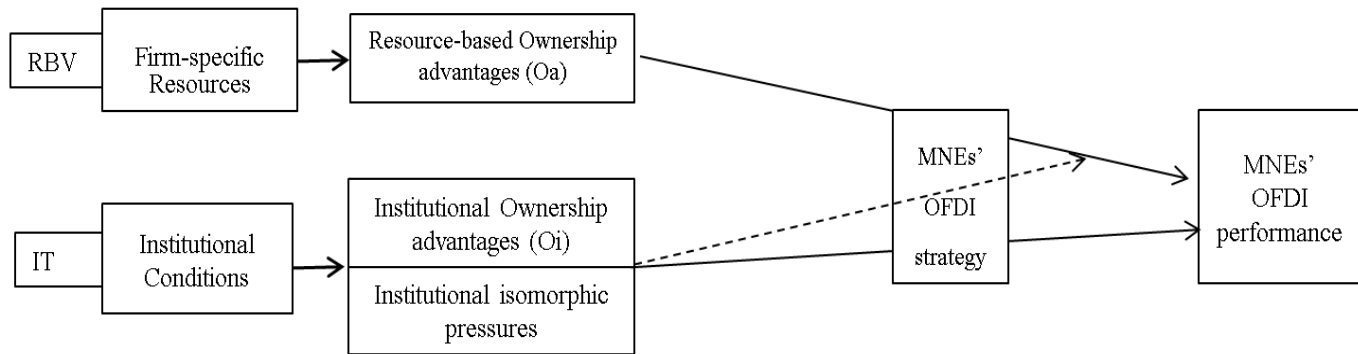


Figure 2: Review of past research: the role of the RBV and IT in explaining MNEs' OFDI strategy and performance

## 2.5 Toward a new model: integrating the RBV and IT to explain- MNEs' OFDI strategy and performance

In the following sub-section, the author's analysis will focus on "how" the RBV and IT can be integrated to explain MNEs' heterogeneity. The author will then propose an extended model integrating the RBV and IT.

### 2.5.1 Integrative mechanisms of the RBV and IT

#### 2.5.1.1 From country-specific advantages to firm-specific advantages: MNEs select, accumulate and formulate firm specific resources in institutions

Firms' resource selection and accumulation are a function of both within-firm decision-making and external institutional factors (Oliver, 1997). Within-firm managerial choices follow economic rationalities and are motivated by effectiveness, efficiency and profitability (Conner, 1991), whereas external influences are institutional factors that affect firms' decisions, including the level of competition intensity, power of buyers and suppliers, product market and industry structure. These factors influence what resources firms select,

as well as how resources are selected and exploited (Oliver, 1991).

Resources and capabilities that are valued by firms for their potential contributions to competitive advantages are acquired in imperfect factor markets or built up via cumulative firm experiences and 'learning by doing' in certain institutional environment (Barney, 1986; Dierickx and Cool, 1989). Instances of valuable firm specific resources and capabilities include technological capabilities, R&D expertise, firms' reputation, and relationships with buyers and suppliers (Barney, 1991; Mahoney and Pandian, 1992; Amit and Schoemaker, 1993). Factor market imperfections in certain institutions, defined as barriers to imitation, acquisition and substitution of key inputs or resources, determine whether resources firms have selected and deployed can generate enduring variations in competitive advantages (Barney, 1991; Barney, 1986; Penrose, 1959; Amit and Schoemaker, 1993).

When factor markets in institutions are imperfect or incomplete, they create barriers to resource mobility, which lead to unequal distributions of resources across competing firms (Barney, 1986; Dierickx and Cool, 1989). These barriers restrain competing firms' opportunities to obtain or duplicate critical resources and thus produce the long-run differences among firms in their capabilities to generate rents. Resource market characteristics, on the other hand, also shape resources' values and characteristics, determining whether resources are unique, scarce, durable, inimitable, idiosyncratic, non-tradeable, non-substitutable and intangible (Rumelt and Lamb, 1984; Rumelt, 1984; Barney, 1991; Amit and Schoemaker, 1993; Mahoney and Pandian, 1992; Peteraf, 1993). In addition, rent-generating resources can be accumulated or developed not only from factor market imperfections but also from unique historical circumstances (e.g., specific physical locations) and the accumulation of specialized capabilities embedded in institutional environment (Barney, 1991). A possible assumption thus exists that MNEs' selection and accumulation of resources are affected by external institutional environment, including factor markets and transaction costs.

Differences among firms in the resources they select and accumulate generate firm heterogeneity (Barney, 1991). As MNEs formulate resources and gain competitive advantages in certain institutions, firms across institutions accumulate different resources in different ways, and thus institutions turn out to be a reason for MNEs' heterogeneity. Oliver (1997) has also developed the concept of "institutional isolating mechanisms", identifying how institutional factors explain the heterogeneity of firm resources. Wan and Hoskisson (2003) suggest that MNEs originate from resource environments that are more or less munificent regarding their institutional context, and thus arguing for the integration of IT to the RBV.

These arguments suggest the following proposition:

***Proposition 1:*** *Since MNEs select, accumulate and formulate firm-specific resources in certain institutional environments, the specific resources MNEs hold vary upon home institutions. In IB, variations of MNEs' embedded home country institutional environments contribute to the heterogeneity of MNEs' specific resources.*

#### 2.5.1.2 Institution-based resources: Institutions' enabling and supplying role in MNEs' formulation of resources

Scott (2008:220) notes that 'by stressing the role of institutions as curbing and constraining choice and action, we ignore the ways in which institutions also empower actors and enable actions.' This kind of institutions' enabling role in governing the value-added processes and decision-making within firms has been recognized by previous literature (Martin, 2014; Dunning and Lundan, 2008a, 2008b; Scott, 2008), which accounts for the institution-enabled sourcing of firm-specific resources (Cantwell et al., 2010; Martin, 2014). However, in addition to that, the author further argues that institutions not only indirectly enable firms to formulate resources, but also directly supply firms with resources, and this is especially true for EMEs who are embedded in the dynamics of the home country economic development

and institutional formulation. Examples of resources that MNEs gain from institutions' direct supplying role include privileged access to raw material and inputs, low-cost capital, financial subsidies and support, foreign exchange, policy resources, foreign market information, and development programs, etc (Buckley etc., 2007). Incorporating both institutions' enabling role and supplying role in MNEs' formulation of resources, this work integrates institutional construct with resource-based construct and proposes the concept of 'Institution-based resources'.

Institutions' enabling role implies that firms are enabled to formulate resources via institutional embeddedness (Cuervo-Cazurra and Genc, 2008). Cantwell et al., (2010) identify the institutional ownership advantage (Oi) that incorporates firm-specific norms and values guiding decision-making, as well as an imprint of institutional environment (L), which confirms the enabling role of home country institutions. Firms formulate firm specific capabilities in home countries (Porter, 1980). According to this opinion, EMEs suffer as a result of operating in a home country characterized by a difficult institutional environment and inefficient or missing market mechanisms (Khanna and Palepu, 1997; Ghemawat and Khanna, 1998). Compared with MNEs from developed institutions, EMEs that originate from underdeveloped institutions tend to be of smaller size (Wells, 1983) and possess technologies that are less cutting-edge (Lall and Chen, 1983; Wells, 1983), and thus are less sophisticated in resources (Bartlett and Ghoshal, 2000; Cuervo-Cazurra and Genc, 2008; Dawar and Frost, 1998). However, EMEs can also benefit from their embeddedness of underdevelopment of institutions. Their ability to manage in difficult institutional conditions, a capability they were required to foster in their home countries to survive and be successful there, may be useful in other developing countries that also have difficult conditions and therefore present similar problems. In those environments, they would have fewer disadvantages, and in some cases may even have an edge over their developed-country counterparts. Thus, while DMNEs are more capital- and technology- intensive because of their well-developed home country institutions, emerging MNEs have specific institution-



based resources for dealing with institutional deficiencies, deriving from their poor home country governance and capital markets (Cui and Jiang, 2012; Wang and You, 2012).

In contrast with institutions' enabling role in resource formulation, institutions' supplying role of resources formulation is more evident in emerging economies with rapid economic development. For EMEs that originate from fast developing home countries like China, home country developmental processes motivate them and support their internationalization by providing supporting resources directly (Buckley etc., 2007). This distinct resource formulation type challenges traditional IB theory, and could be applied to solve the dilemma that how and why EMEs, as later comers, are capable to compete in international markets.

Traditional international business theory suggests that MNEs' resources (O advantage/FSA) should have been generated entirely in their home-country operations, and their initial extension of operations into foreign markets should logically stem from activities in home countries (Dunning, 1977, 1988; Vernon, 1966). They formulate the decisively strong resources of international competitiveness over quite a long period of time during which their own evolution have been embedded in the processes of their own home country's technological deepening and industrialization, and then start to address their specific resources by leveraging their knowledge and creative heterogeneity of different locations (Papanastassiou and Pearce, 2009). But EMEs' internationalization has been occurring before such firms have plausibly had the opportunity to generate strong resources that facilitate their entries into international markets in the traditional fashion, and before their domestic market positioning has provoked reasons for them to need to consider doing so. Thus there comes the question that how it is possible for EMEs to address the challenge of internationalization and why they do so.

The author argues that EMEs are able to expand internationally, despite their absence of enough firm resources and capabilities, because they can access various types of resource

and support from their home countries, and this direct institution-based resources from home institutions is a reflection of institutions' supplying role of resources. But the extent to which EMEs can gain this kind of institution-based resources depends on the development requests of their home institutions and their relationships with home institutions. EMEs' relationships with home institutions affect the types and degrees of resources that institutions would offer them (Cui and Jiang, 2012). Home institutions may define opportunities and provide resources for EMEs that have close relations with them to underpin their internationalization. For example, state owned EMEs are endowed with monopolistic resources, like political support, capital from state-owned banks, extra business chances provided by national corporations, human capital (Amighini, Rabellotti, and Sanfilippo, 2013), access to networks, and privileged access to information about particular host countries that help reduce the liability of foreignness (Cui and Jiang, 2009; Luo, Xue, and Han, 2010).

Thus, in conclusion, this current research moves forward by proposing the concept of 'institution-based resources', incorporating a comprehensive consideration of both institutions' enabling and supplying role in MNEs' formulation of resources. Recognition of this concept is crucial in international business research as it combines the RBV and IT to explain MNEs, especially EMEs' internationalization trajectories. Therefore, the author proposes that:

***Proposition 2:*** *In line with the integration of macro institutions and micro MNEs' specific resources, the concept institution-based resources refer to MNEs' formulation of resources from both institutions' indirect enabling role and direct supplying role. On one hand, MNEs formulate resources indirectly via home country institutional embeddedness; on the other hand, home institutions directly provide MNEs with resources according to the degree of MNE-institution relationships and home institutions' development processes.*

### 2.5.1.3 Effects of MNEs' resources on internationalization strategy and performance moderated by institutions

Limitations of the RBV's applicability in an international business context have been highlighted recently for its little effort to establish appropriate institutional contexts (Priem and Butler, 2001). Institutional factors, on one hand, affect resources' value as valuable, rare, and hard-to-imitate resources and capabilities in one context could be non-valuable, plentiful, and easy to imitate in other contexts (Brouthers et al., 2008b; Oliver, 1997). On the other hand, MNEs' valuable resources have different levels of applicability in different institutional contexts, which requires firms to take institutional differences into consideration when formulating internationalization strategies.

Institutional boundaries create limitations on resource factors' global mobility, which influence the value of resources and thus MNEs' resource-based advantages (Henisz, 2003; Wan, 2005). As resources' value varies upon institutions, MNEs that lack institutional contextual knowledge might experience the erosion of resource-based value in host countries for several reasons. Firstly, MNEs need context-specific knowledge to know how to make the maximum exploitation of existing resources in new institutional settings (Dyer and Singh, 1998). Differences in legal, regulative, and normative environments require firms' resource-based advantages to be supplemented by location specific knowledge and exploited in appropriate ways. For instance, DMNEs entering emerging markets like China need to learn specific knowledge to deal with Chinese values, customs, guanxi networks, and have to build up relationships with Chinese government (Xin and Pearce, 1996). Without a proper understanding of institutional context-specific issues, value of resources might be reduced, possibly through the lack of access to needed suppliers or channels, government barriers, or illegal copying, etc. Besides, institutional barriers will add costs and create potential delays in foreign entry, which also leads to the resource-based value erosion. Secondly, when operating in host countries, institutional differences between home and host countries might create a "liability of foreignness" for MNEs, even for those MNEs with resource-based

advantages (Zaheer, 1995). MNEs incur additional costs and time to understand and deal with individuals, organizations and governments in new institutional environments, and the lack of context-specific knowledge might result in greater costs for information acquisition and absorption. Compared with competitors who are familiar with the location and location-specific institutional characteristics, MNEs need longer time to integrate their resource-based advantages with new knowledge (Madhok, 2002; Peng et al., 2003). Thus in conclusion, “liabilities of foreignness” derived from institutional context differences might result in resource-based value erosion, through loss of time, increased financial costs, misunderstandings and ways in resource exploitation.

Thus the author proposes that,

***Proposition 3:*** *The value and applicability of MNEs’ resources vary upon institutions. Institutional factors moderate the effect of resources on MNEs’ internationalization strategy and performance.*

#### 2.5.1.4 Effects of institutions on MNEs’ internationalization strategy and performance moderated by MNEs’ resources

International business scholars have recently focused on how institutional factors, especially the distance between the home and host country institutions, impact foreign entry strategy and subsidiary performance (Brouthers et al., 2008b; Dikova and Van Witteloostuijn, 2007; Xia, Boal, and Delios, 2009; Meyer et al., 2009; Brouthers, 2002; Siegel, 2009; Uhlenbruck, Rodriguez, Doh, and Eden, 2006). Theoretical arguments and empirical evidence, however, are inconsistent, which challenges IT’s power in explaining MNEs’ internationalization and suggests the need to examine the interaction between IT and other theories (Wright et al., 2005; Xu and Meyer, 2013).

IT suggests that firms’ conformity based on institutional pressures legitimates them (DiMaggio and Powell, 1983) by contributing to their acceptance and endorsement by

relevant actors in the institutional environment, and the resulting legitimacy can be critical to the firm's survival and performance (Meyer and Rowan, 1977). But international business scholars have recognized the dilemma experienced by MNEs facing multiple and contradictory institutional demands (Kostova and Roth, 2002). Foreign subsidiaries confront the need to maintain legitimacy under both external and internal isomorphic pressures. While external pressures force MNEs to adapt to host country institutional environments, internal isomorphic pressures request them to obey internal rules and make strategies according to MNEs' holding of ownership advantages and specific resources. MNEs' resources and capabilities on one hand, moderate the institutional pressures they confronted with in host institutions, and thus affect MNEs' reactions to host country isomorphic pressures. On the other hand, MNEs' resources and capabilities enable them to exploit institutional advantages more effectively in international markets (Wang et al., 2012).

Marano and Kostova (2016) show that MNEs' relational ties with host country institutions shape the degree of institutional complexity MNEs will experience. Svensson (2003) also suggests that MNEs face the same set of regulations and institutional pressures for corruption in specific host countries, but their "refusal power", measured by resources and alternative return, can explain a large part of the variation in their corresponding bribing strategy. Galang (2012) highlights that MNE' strategy in response to institutionalized corruption in host countries is dependent on their political resources, and corruption's consequences on MNEs' performance are also potentially asymmetric upon their characteristics. Additionally, MNEs' home country institutional embeddedness, which is identified as institution-based resources, could significantly moderate the degree of MNEs' perceived institutional pressures in host countries. EMEs face lower pressures in similar institutional environments, and thus contain superior institutional advantages (Cuervo-Cazurra and Genc, 2008).

Based on the above analysis, the author proposes that,

***Proposition 4:*** *MNEs' resources moderate institutions' effect on their internationalization strategy and performance.*

### **2.5.2 Toward a new model: integrating resource-based and institutional constructs to explain MNEs' OFDI strategy and performance**

The above analysis confirms the need for and possibilities of integrating the RBV and IT in international business research, which leaves us a foundation for proposing a new theoretical framework using an integrative approach. The underlying assumptions of the RBV and IT are different, but in international business research both theories can be used to explain the heterogeneity of MNEs' internationalization (Kostova and Roth, 2002; Martin, 2014). MNEs select, accumulate, and formulate their firm-specific resources, including institution-based resources in institutions, and the value and applicability of MNEs' resources vary dramatically across institutions. The role of Institutions and resources in MNEs' OFDI strategy formation and performance are mutually moderated by each other, calling for an interactive approach incorporating both institutional and resource-based factors to explain the phenomena.

More importantly, the RBV and IT each have limitations in explaining MNEs' OFDI strategy and results, but these two lenses are complementary and interdependent. Institutional factors enrich MNEs' assets and international capabilities and superior resources assist in reducing institutional pressures and exploiting institutional advantages more effectively. Thus there is a need for an integration of these two approaches (Wang et al., 2012). The RBV and IT each in their way contribute to the development of international business theory (Meyer, Wright, and Pruthi, 2009), but either provides only a partial account of firms' international

expansion. As EMEs are actually not resource-intensive enough and their internationalization is highly affected by home country institutional factors, e.g., home country institutional underdevelopment and highly government intervention (Buckley et al., 2008), an integrative approach of the RBV and IT is particularly suitable and highly needed for explaining EMEs' different internationalization trajectories.

Following this, the author develops a new theoretical framework that integrates resource-based and institutional constructs to explain MNEs' OFDI strategy and performance. Particularly, the author extends the existing theory (e.g. Cantwell et al., 2010; Peng et al., 2009; Spencer and Gomez, 2011; Martin, 2014) by arguing that a) MNEs are endowed with institution-based resources, which influence their OFDI strategy and performance; b) Institutional and resource-based factors have their respective effect on MNEs' OFDI strategy and performance, and c) Institutional and resource-based factors also interactively moderate the effectiveness of MNEs' OFDI strategy on performance.

The model proposed by the author firstly suggests that the RBV and IT both have a separate effect on MNEs' OFDI strategy and performance. MNEs' holding of resources, their embedded home country institutional conditions, confronted institutional pressures, and OFDI strategies including entry mode and investment destination could all affect their internationalization results (Brouthers etc., 2008b). This proposition is not new, and has been confirmed by the past literature. However, it will also be incorporated in the model as it is the foundation of the interactive effects in the following steps (Andersson, Cuervo-Cazurra, and Nielsen, 2014).

Secondly, different from past research which has only captured institutions' enabling role in firms' resource development, the model proposes a new concept –institution-based resources, based on the integration of the RBV and IT, recognizing both institutions' enabling and supplying role. Dunning and Lundan (2008a) try to incorporate institutional analysis into the OLI model to explain MNEs' ownership advantages. Their work shows that

MNEs have formulated institutional ownership advantages from well-developed institutional infrastructure in their home countries. This view is similarly to Porter's (1980) theory that firms formulate competitive advantages from their embedded industries. But Dunning and Lundun's (2008a) proposition of institutional ownership advantage cannot explain why EMEs from undeveloped institutions with poor institutional infrastructure are now entering developed markets. EMEs might have comparative institutional advantages in similar emerging markets and undeveloped markets (Cuervo-Cazurra and Genc, 2008), but why do they go beyond these to developed markets, and more essentially, how can they compete in developed markets with resource-intensive DMNEs and local firms? Here the author believes the concept institution-based resources provide some clues to solve this dilemma. EMEs are benefiting from home country institutions, and what home country institutions provide them are not only capabilities in dealing with institutional hazards, but also direct resources, e.g., capital, privileges in domestic markets, and information, which helps them to overcome the foreignness of liability in developed markets. The institution-based resources are originally from emerging economies' quick economic development and rapid growth of foreign exchange reserves. But not all EMEs benefit from the institution-based resources as the amounts of institution-based resources they can obtain depend upon their relationships with governments. The tighter this relationship, the heavier the EMEs' resource-dependence on governments (Cui and Jiang, 2012). Institution-based resources thus on one hand, assist EMEs in dealing with liability of foreignness in international markets, but on the other hand, tie EMEs to home country governments, which turns them to be political entities, but not pure profits pursuing organizations. This special situation will significantly affect EMEs' OFDI motivations, strategies, and final financial performance.

Thirdly, integrative mechanisms of the RBV and IT indicate that resource-based and institutional factors moderate each other's role in MNEs' internationalization strategy formation and performance. When making OFDI decisions, MNEs' need to exploit their resource-based advantages, but also take host country institutional environments into



account. MNEs' holding of resources supplement and moderate the level of institutional pressures they are confronted. At the same time, institutional differences moderate the value of MNEs' resources, and institution-based resources supplement this absence of asset-based ownership advantages. Thus, the author argues that EMEs' resource-based advantages and institutional conditions jointly determine their OFDI strategy. In addition, as it is resources that guarantee the effectiveness of strategy, and institutional contexts affect whether strategy works in the right way, the author further argues that resource-based and institutional factors interactively moderate the effectiveness of MNEs' OFDI strategy.

According to the above analysis, the author develops a new model (Figure 3), and the main propositions are as follows:

***Proposition 5a): Resource-based factors, institutional factors and MNEs' OFDI strategies have respective effect on MNEs' OFDI performance.***

***Proposition 5b): Resource-based construct and institutional construct need to be integrated in MNE study as a) they moderate each other's role on MNE activities; b) they integrate to generate MNEs' institution-based resources, and thus,***

***Proposition 5c): Institutional and resource-based factors jointly determine MNEs' OFDI strategy.***

***Proposition 5d): Institutional and resource-based factors integrate to moderate the effect of MNEs' OFDI strategy on performance.***

Following the above theoretical framework and propositions, the next three chapters will be empirical studies for theory testing. The blue line in figure 3 demonstrates the proposition 5a), and will be tested in the next chapter (Chapter 3) by examining that what are the respective roles of resource-based, institutional factors, and MNEs'

strategy on EMEs' productivity growth from OFDI.

Proposition 5b) emphasizes the integrative role of resource-based factors and institutional factors. This proposition will not be tested as a separate empirical study. But following this proposition, resource-based construct and institutional construct will be treated as one integrative unit in chapters 4 and 5. Chapter 4 (the green line in Figure 3), in line with the proposition 5c), aims to test that how do resource-based and institutional factors jointly determine MNE subsidiaries' bring strategy in host countries. The last empirical study in chapter 5 (the red line in Figure 3) is utilized to test the proposition 5d), i.e. how do resource-based and institutional factors integrate to moderate the effectiveness of MNE subsidiaries' bribing strategy on financial performance.

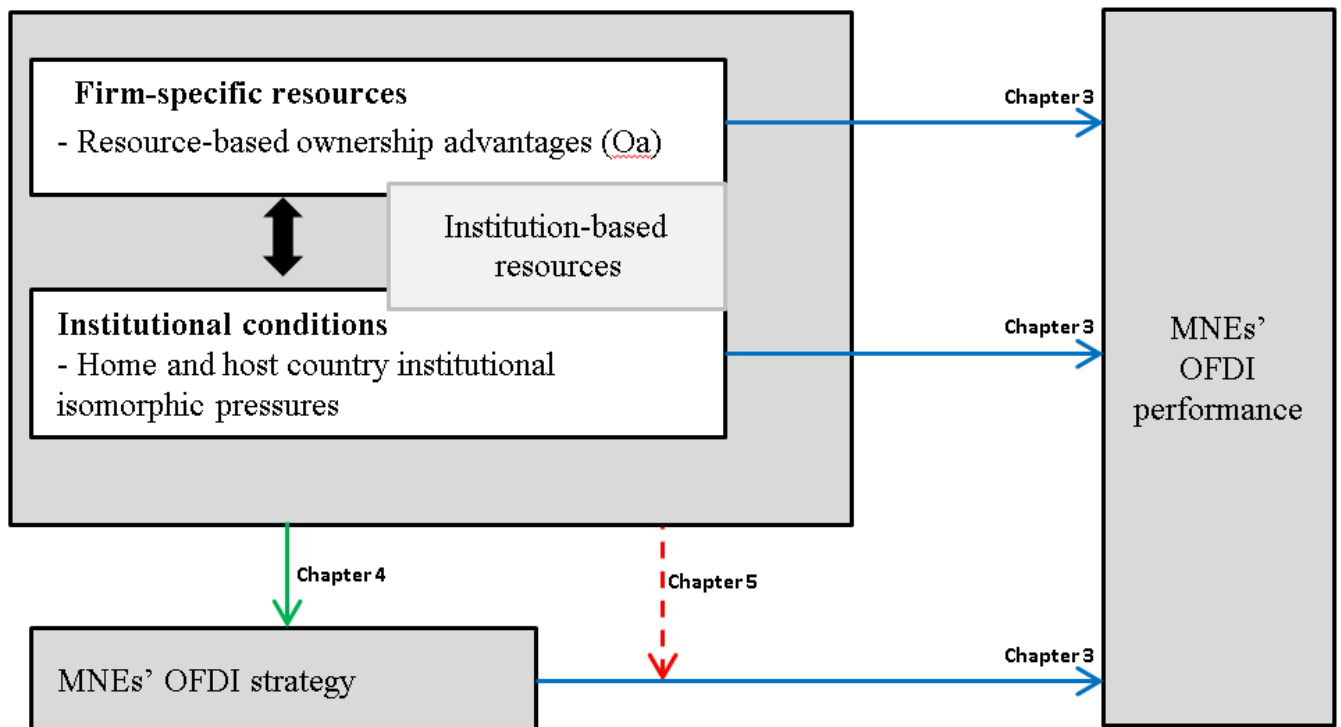


Figure 3: Theoretical framework: separate and integrative roles of the RBV and IT in explaining MNEs' OFDI strategy and performance

## **2.6 Discussion and conclusion**

Based on a discussion of the boundaries and limitations of the RBV and IT, the author has analyzed the mechanisms of their firm-level integration for a better application in international business research, and then extended existing theory and proposed a new model integrating the RBV and IT, to explain MNEs' OFDI strategy and performance.

Respective roles of the RBV and IT in international business research have widely been discussed (Brouthers et al., 2008b; Chen et al., 2009; Cuervo-Cazurra and Genc, 2008; Meyer, 2001; Meyer et al., 2009; Xu and Meyer, 2013), but recently scholar have recognized that either of the theories can explain only partial of MNEs' internationalization trajectories, and their complementary and interdependent position indicates that an integration of both theories helps explain international business issues better (Wang et al., 2012; Brouthers et al., 2008b; Hoskisson et al., 2013; Wright et al., 2005). Even through the RBV and IT have different assumptions, these two theories can be integrated in international business area and their integration mechanisms are identified as (a): MNEs select, accumulate and formulate firm-specific resources in certain institutional environment, and in international business, variations of MNEs' embedded institutional environments contribute to the heterogeneity of their specific resources; (b): Incorporating both institutions' indirect enabling role and direct supplying role in MNEs' formulation of resources, institution-based resources assist dramatically in explaining MNEs', especially EMEs' distinct internationalization trajectories; (C): The value and applicability of MNEs' resources vary upon institutions. Institutional factors moderate the effect of resources on MNEs' internationalization strategy and performance; (d): MNEs' specific resources moderate the effect of institutions on their internationalization strategy and performance.

Contradictory to the predictions from traditional international business theory, EMEs are now emerging long before the level of development sophistication of their home countries should have allowed them to obtain the types of unique firms specific resources to the

successful pioneering traditional MNEs (Buckley et al., 2007; Buckley et al., 2008). Thus there is a huge research gap about “why” EMEs go global and “how” they compete in global markets. The model presented in the chapter is based on an integration of the RBV and IT and extends traditional international business theory. To answer the above questions the author argues that a): MNEs accumulate institution-based resources from home country institutions’ enabling role and supplying role of firm resources. MNEs’ holding of institution-based resources affects their OFDI strategy and performance; (b): Institutional and resource-based factors have separate effect on MNEs’ OFDI strategy and performance, but they then jointly determine MNEs’ OFDI strategy and interactively moderate the effectiveness of MNEs’ OFDI strategy on performance.

The author firstly contributes to the literature by identifying an integrative approach based on the RBV and IT to explain MNEs’ OFDI strategy and results. Some scholars have emphasized a theoretical integration of IT with other perspectives to provide a more fine-grained insight into the roles played by institutional variations (Hoskisson et al., 2013). Others criticized the applicability of the RBV in international business research as it ignores institutions’ influence. Brouthers et al. (2008b) and Peng et al. (2008) argue for an integration of the RBV and IT, but so far, no research has demonstrated in details the mechanisms with which the RBV and IT are integrated to predict international business issues. Hence, rather than merely asking “Is IT/RBV enough to explain MNEs, especially EMEs’ OFDI” or “Shall we integrate the RBV and IT?”, the author discerns “why” the RBV and IT should be integrated, and “how” they can be integrated.

Secondly, the author proposes a concept of “institution-based resources”, identifying home countries’ enabling role and supplying role in MNEs’ formulation of firm specific resources. It is a concept that developed based on the integration of the RBV and IT, recognizing the macro institutions’ role in the development of micro firm-specific resources. Institutions’ enabling role in resource development has been recognized as Martin’s (2014) argument of institutional advantage and Cuervo-Cazurra and Genc’s (2008) opinion that EMEs are

endowed with special competitive advantages from the embeddedness of undeveloped home country institutions. But they are far from enough to explain the questions “why” EMEs’ go global and “how” they can compete in global markets? Buckley et al. (2007) propose that EMEs’ OFDI is indeed distinctive with traditional international business theory because of their home country capital imperfections, special ownership advantages, and institutional factors. But they have not comprehensively identified and theorized how these institutional factors matter. The author has developed the concept of institution-based resources which on one hand, supports the enabling role of institutions; on the other hand, further argues that MNEs, especially EMEs are endowed with specific resources from home country institutions directly, and the amounts MEMs can obtain depend on the degree of firm-institution relationships and institutions’ development processes. The recognition of this concept helps explain why and how EMEs conduct OFDI, and thus should be nested in traditional international business theory.

Despite its significant power in explaining MNEs’ OFDI trajectories, IT is not enough in fully predicting MNEs’ OFDI strategies and results. Thus, thirdly, the author contributes to the literature by identifying the interactive role of institutional and resource-based factors in international business research. The author develops a new theoretical framework that integrates resource-based and institutional constructs to explain MNEs’ OFDI strategy and performance. The author agrees with previous arguments about the RBV and IT’s separate roles in OFDI strategy formation and performance (Cuervo-Cazurra and Genc, 2008; Xu and Meyer, 2013; Brouthers et al., 2008b; Chen et al., 2009; Meyer, 2001; Meyer, Saul Estrin, et al., 2009). But the author further contributes by recognizing the joint role of institutional and resource-based factors in determining MNEs’ OFDI strategy, and their interactive role in moderating the effectiveness of MNEs’ OFDI strategy on international performance. As Brouthers et al. (2008) has demonstrated, international decisions predicted by a model incorporating both the role of context and firm resources could yield better subsidiary performance. The new model presented in this chapter is based on the integration of these

two perspectives, producing better applicability in predicting EMEs' OFDI strategy and behavior.

In the following chapter 3, 4 & 5, fine data sets and estimation techniques will be utilized to test this new model the author has developed in this chapter, following a step-by-step approach. Chapter 3 will test the baseline of the model, i.e., the respective impact of resource-based factors, institutional factors and OFDI strategies on MNEs' OFDI performance. Chapter 4 will focus on investigating the joint role of resource-based and institutional factors in determining MNEs' ODI strategy, and the last chapter 5 will test the integrative role of resource-based and institutional factors in moderating the effectiveness of MNEs' OFDI strategy on performance.

## **Chapter 3: Separate Roles of Resource-based and Institutional Factors and OFDI Strategies in EMEs' Productivity Gain from OFDI – An Empirical Test**

### **3.1 Introduction**

There is a sizable literature about the impact of outward foreign direct investment (OFDI) on employment, exports, investment, and productivity in developed economies (Bitzer and Kerekes, 2008; Branstetter, 2006; Chen and Yang, 2013; Chen, 2011; Chuang and Lin, 1999; De La Potterie and Lichtenberg, 2001; Herzer, 2008, 2010, 2011; Kogut and Chang, 1991; Pradhan and Singh, 2008). Recently, emerging economies' role as an important source of OFDI has been recognized (Buckley et al., 2007; Buckley et al., 2008; Herzer, 2011; Luo and Tung, 2007), but studies on the crucial OFDI-productivity link in emerging economy multinational enterprises (EMEs) are very limited (Herzer, 2011; Zhao et al., 2010). Even though some studies have referred to this linkage, their results are inconsistent, probably because of the lack of careful consideration of the moderating effects of firm-level heterogeneity (Herzer, 2011), proper control of the endogenous self-selection bias and suitable productivity measurement techniques (De Loecker, 2007; Hijzen et al., 2007; Hijzen et al., 2011).

This chapter aims to address the above-mentioned problems and tests proposition 1 of the theoretical model presented in chapter 2, i.e. resource-based factors, institutional factors and OFDI strategies have respective effect on MNEs' OFDI performance. This chapter will contribute to the existing literature in three ways. Firstly, given EMEs' lack of capabilities and strong resource-dependence on home country governments (Buckley et al., 2007; Buckley et al., 2008; Deng, 2007; Ramasamy, Yeung, and Laforet, 2012; Wang et al., 2012),

the author develops a novel theoretical framework for the OFDI-productivity<sup>1</sup> nexus that incorporates both the RBV and IT. Specifically, this framework explains how firm heterogeneity in terms of absorptive capacity, state ownership and internationalization strategy affects OFDI's productivity effects on EMEs. To the author's best knowledge, this is the very first study that looks at EMEs' productivity gains from OFDI with careful considerations of EMEs' firm level heterogeneity in resource-based and institutional conditions and entry strategies, using one integrated firm-level dataset. Secondly, the author examines the 'real' OFDI-led productivity change for EMEs via careful control for the possible endogeneity of productivity change, using a method combining the propensity-score matching and difference-in-difference (DID) approaches (Arnold and Javorcik, 2005). Thirdly, the author augments Olley and Pakes's (1992) semi-parametric approach to measure TFP, via introducing the OFDI dummy and export dummy in the production function, allowing for various production estimation functions for EMEs with different OFDI and export status. This enables us to not only efficiently control for the possible simultaneity and selection biases (Olley and Pakes, 1992), but also successfully remove the potential productivity estimation bias from omitting influential variables in the production function estimation (De Loecker, 2011; De Loecker et al., 2012).

China's drastic changes in OFDI orientation and rapid growth in OFDI flows since 2002 provide us with a natural setting for analyzing the relationship between OFDI participation and firm productivity variations. Based on an integrated dataset from 1516 Chinese firms with 2033 foreign subsidiaries from China's National Bureau of Statistics, Ministry of Commerce, local government reports and firm-level official websites for the period 2002-2008, the author examines the instantaneous and future productivity gains upon OFDI entry controlling for the self-selection process. The author finds positive productivity premiums

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<sup>1</sup> Firm productivity is a component of a country's production efficiency, which plays an essential role in shaping a country's GDP growth. Therefore, the author chooses firm productivity as the dependent variable, to some extent, to shed light on a country's growth.



for EMEs with OFDI, but this productivity effect varies significantly according to EMEs' heterogeneity in state ownership, absorptive capacity, and internationalization entry mode and investment destination. The estimation results indicate that EMEs without state ownership gain positive productivity effect via OFDI, while this effect is insignificant for those with state ownership. The author also finds that EMEs with stronger absorptive capability gain higher and more sustainable productivity effect and that this effect will be lagged if merge and acquisition (M&A) is employed as an entry strategy. Furthermore, productivity gains are higher for EMEs investing in developed than in less developed countries.

The rest of the paper is organized as follows. The next section introduces the theoretical framework and hypotheses, based on a critical review of the RBV and IT. In Section 3, the author describes the dataset. Section 4 explains the measurement of the main variables used in the study, illustrates the preliminary analysis and justifies the estimation strategy adopted, including the choice of appropriate comparison groups with the propensity-score matching technique. The estimation results will be presented in Section 5. Section 6 presents the robustness check via different TFP and investment destination measures and one-step system-GMM estimation. Finally, Section 7 offers discussions and conclusions.

### **3.2 Theory and Hypotheses**

Recent progress in the RBV has focused on understanding where resources derive from and how they are assembled (Barney, Ketchen, and Wright, 2011; Sirmon, Hitt, Ireland, and Gilbert, 2011), and transferred across national boundaries (Meyer, Wright, and Pruthi, 2009). This process recognizes the dual possibility for firms to utilize resources, as well as accumulate and leverage them to generate competitive advantage and productivity growth. Cantwell (1989), Dunning (1988, 1994), Frost (2001), Shan and Song (1997), and Teece (1992) endorse this by asserting that a firm's specific advantage and productivity change can

arise not only from the ownership of proprietary assets, but also from the ability to secure, or efficiently coordinate, the complementary assets possessed by other firms in host countries via OFDI. As later comers, EMEs, in contrast to developed country MNEs, are more likely to pursue productivity effect via OFDI as they are based in less innovative developing regions, possess a relatively narrow range and intensity of knowledge competencies, and hence more urgently engage in asset-seeking FDI in order to address their competitive disadvantages and improve their global competitiveness (Buckley et al., 2007).

However, existing literature generates inconsistent estimation results of OFDI's productivity effects on EMEs, challenging the direct OFDI-productivity linkage based on the RBV (Barba Navaretti and Castellani, 2004; Bitzer and Kerekes, 2008; De La Potterie and Lichtenberg, 2001; Driffield and Chiang, 2009; Herzer, 2011; Hijzen et al., 2007; Masso and Vahter, 2008). Why are the testing results of the OFDI-led productivity growth hypothesis based on similar datasets and estimation techniques so mixed? In line with the RBV, Helpman, Melitz, and Yeaple (2004) suggest that firm level resource heterogeneity makes firms' investment performance diversity possible (Grossman, Helpman, and Szeidl, 2006). Technology diffusion and productivity premium are by no means automatic (Kokko and Kravtsova, 2008). Higher productivity gains should be expected for EMEs which have higher R&D and absorptive capability and invest in relatively developed regions (Almeida and Kogut, 1997; Audretsch and Feldman, 2004; Cantwell and Janne, 1999; Cohen and Levinthal, 1989, 1990; Dosi, 1988; L. Kim, 1997; Lall, 1992). EMEs are regarded as lacking ownership advantages but at the same time having close relations with home country governments (Child and Rodrigues, 2005; Luo and Tung, 2007; Yiu, Lau, and Bruton, 2007). They are strongly influenced and supported by home country governments and other institutions (Cui and Jiang, 2009) and hence the RBV alone is argued to be far from enough for explaining EMEs' internationalization strategy and performance (Peng et al., 2008). This chapter tries to fill in the research gap in productivity effects of EMEs by developing and

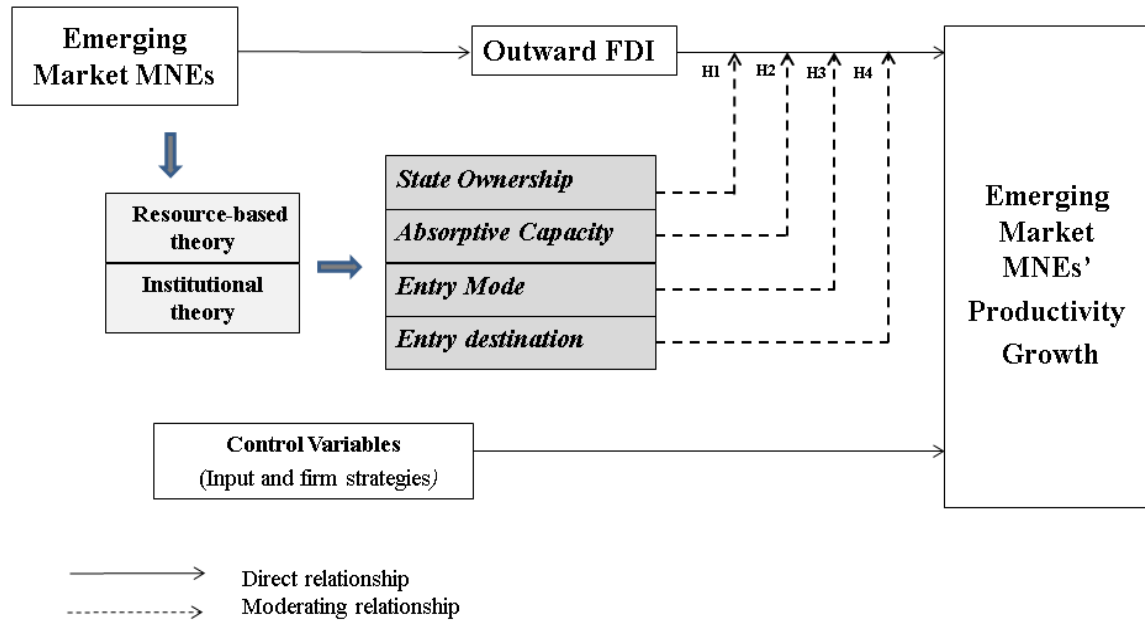
testing a new theoretical framework which incorporates both the RBV and IT for predicting how an EME's heterogeneity in prerequisite resources, institutional background, and corresponding internationalization strategy moderates OFDI's productivity effect on the EME. This framework is one part of the model the author has developed in chapter 2.

The RBV posits that firm-specific resources differentiate successful EMEs from failing ones, but it is criticized for its "little effort to establish appropriate contexts" (Priem and Butler, 2001) and overlook of how important institutional force - the home country government – interferes with the use of firm specific resources and affects EMEs' internationalization behavior (Wang et al., 2012). Institutional theory proposes that firms are affected by institutions – defined as regulative, normative, and cognitive structures (Scott, 1995b). EMEs are shaped by political, legal and social rules, and by the broader political context surrounding the decision to internationalize (Oliver, 1991; Peng et al., 2008). As such, their determinants and performance of OFDI activities extend beyond economic optimization. "Institutions directly determine what arrows firms have in its quiver as it struggles to formulate and implement strategy and to create competitive advantage" (Ingram and Silverman, 2002). EMEs, especially EMEs with state ownership, enjoy a high level of home country government support, which endows them with a specific institutional ownership advantages to ameliorate certain ownership and location disadvantages (Buckley et al., 2007; Lecraw, 1993). The author introduces a concept called 'institution-based resources' to integrate the RBV and IT. EMEs formulate specific resources based on underdeveloped home country institutions and strong home country government support. EMEs use such specific resources to compete with host country firms. These institution-based resources on one hand, offer EMEs with privileged resources, but on the other hand, increase EMEs' resource-dependency on home country institutions (Cui and Jiang, 2012), which significantly moderates EMEs' internationalization strategy and outcomes.

To the best of the author's knowledge, this has been the first attempt which combines the RBV and IT to explain how firm resources, home country institutions, and the corresponding internationalization strategies moderate EMEs' productivity gain from OFDI. An integrative perspective based on the RBV and IT the author proposes below will enhance our understanding of OFDI's productivity effect on EMEs. First, underlying assumptions and boundary conditions of the RBV and IT are different, and hence they serve only a partial account of EMEs' international expansion and the incorporation of them contributes to the advances of EMEs' internationalization theory (Meyer et al., 2009). For instance, the RBV addresses neither why managers may make decisions that are not economically optimal, nor how firms balance competitive and institutional pressures. Differences in OFDI's productivity effect on EMEs not resulting from variations in resources are particularly intriguing, partly because they cannot be explained by the RBV reasoning. Second, resource-based constructs and institutional forces are interdependent. They interact with and influence each other. For example, EMEs formulate specific institution-based resources based on home country institutions. Their internationalization strategies and outcomes are influenced by how the institutional context affects access to valuable resources, which will then affect EMEs' ability and willingness to invest abroad. It is valuable to combine the RBV and IT, particularly in an emerging economy context, where firms' strategies and performance are influenced by the hybrid state of "neither hierarchy nor market" (Powell, 1990).

EMEs' ownership status, absorptive capacity, OFDI entry mode and entry destinations have been selected by the author as the representatives of the institutional factors, resource-based factors and OFDI strategies that could moderate EMEs' productivity gain from OFDI. These four variables are chosen because they can significantly influence outcomes of EME investment activities based on the framework. Firstly, the author chooses state ownership as one moderating variable because this status represents EMEs' affiliation with government, and is the most important institutional factor influencing EMEs (Buckley et al., 2008; Cui

and Jiang, 2012; Deng, 2009; Wang et al., 2012) due to state provision of institution-based resources to these firms (Hoskisson, Wright, Filatotchev, and Peng, 2013; Peng, 2003). Secondly, in line with Cohen and Levinthal (1990), Dai and Yu (2013), and Griffith, Redding, and Van Reenen (2004) who suggest that a firm's valuable resources derive from intangible knowledge, the next moderating variable the author selects is absorptive capacity, measured by R&D to capture an EME's key valuable resources. This variable moderates the OFDI-productivity linkage as it can assist EMEs in recognizing, exploiting acquired global assets and making further innovations. Finally, entry mode and investment destination as two very important internationalization strategies are determined by EMEs' resources and institutional background (Buckley et al., 2007; Cui and Jiang, 2009; Ramasamy et al., 2012), and can significantly moderate outcomes of EMEs' OFDI. The theoretical framework and hypotheses is represented by Figure 4, and this framework is one part of the model that the author proposed in chapter 2 (Figure 3). As the author has clarified before, the model in chapter 2 (Figure 3) will be tested step-by-step in chapter 3, 4 and 5. This framework will be the first step which focuses on the respective impact of resource-based factors, institutional factors and OFDI strategies on EMEs' productivity gain from OFDI.



**Figure 4:** Theoretical framework and hypotheses

### 3.2.1 State ownership and OFDI's productivity effect on EMEs

Institutional factors have important influences on EMEs' OFDI performance, and arguably, among various institutional dimensions, home country governments may be of paramount importance as a driving force of EMEs' internationalization (Li, He, Lan, and Yiu, 2012; Zhou and Delios, 2012). In contrast with private EMEs, EMEs with state ownership (SO-EME) are, by definition, assets of home-country governments, which make them a part of their home-country institutions, and thus contain specific institution-based resources in international competition (Cui and Jiang, 2012). From the perspective of home country institutions, SO-EMEs enjoy monopolistic resources, like political support, capital from state-owned banks, extra business chances provided by national corporations, human capital (Amighini et al., 2013), access to networks and privileged access to information about particular host countries that help reduce the liability of foreignness (Cui and Jiang, 2009; Luo et al., 2010), but they are also subjective to restrictive government approval, and the higher level the SO-EMEs' affiliation with governments, the higher level of home country

institutional pressures they confront with (Liu, 2005). On the other hand, because of SO-EMEs' affiliation to home country governments, they are always recognized as political actors in host countries, especially in developed countries, which pushes them into a negative position when internationalizing to acquire assets (He and Lyles, 2008). SO-EME managers, who are also government officials, play a crucial role in moderating the productivity effect EMEs could finally gain from OFDI (Brockman, Rui, and Zou, 2013).

Following the RBV, an EME's international competitive capability is positively correlated with the firm's holding of specific resources. SO-EMEs, which are endowed with strong institution-based resources, should be more capable of achieving better performance, and gaining more productivity premium from the global market. However, with unparalleled resources, SO-EMEs' bad international performance surprises scholars and challenges the traditional RBV (Buckley et al., 2007; Buckley et al., 2008; Ramasamy et al., 2012). The possible negative impacts of state ownership on EMEs' gain from internationalization cannot be ignored (Morck, Yeung, and Zhao, 2008; Witt and Lewin, 2007). As a result, employment of IT to complement the RBV for explaining the moderating effect of state ownership on EMEs' OFDI outcomes is justified.

Institutional theory argues that firms are under institutional pressure to adhere to the formal and informal rules in their institutional fields, and become isomorphic (DiMaggio and Powell, 1983; Scott, 1995b). Firms vary in their responses to the institutional pressures, according to firms' different levels of resource dependence on the institution that exerts the pressure (Oliver, 1991). With high resource dependence, a firm is more likely to conform to the institutional pressures to avoid negative consequences (Salancik and Pfeffer, 1978). Thus according to IT, state ownership strengthens the home-country institutional pressures on EMEs' internationalization strategies and outcomes. In contrast with private EMEs, SO-EMEs are politically affiliated with home-country governments, and are highly dependent on

the home-country institutions for critical resource inputs (Liang, Ren, and Sun, 2015). They are under more pressures to conform to, rather than resist the political and strategic purposes home country governments specify for OFDI. While pursuing their business objectives, SO-EMEs are always required to serve the political mandates of the state and align their interests with the home institutions rather than challenge these interests (Scott, 2002; Zhang, Zhou, and Ebberts, 2011). Under this condition, when internationalizing, SO-EMEs are confronted with strong home country institutional pressures, and thus turn out to be a political actor seeking for political goals, but not profit-maximizing agencies, which is the assumption of the RBV (Buckley et al., 2007). It is well-known that SO-EMEs from China have a distinct feature as they tend to invest in countries with high political risk to seek natural resources, serving as a political actor for the nation's sustainable development (Buckley et al., 2007; Ramasamy et al., 2012). At the same time, OFDI from SO-EMEs often encounter highly burdensome and bureaucratic administrative OFDI approval procedures as governments at various levels, seek to affect the direction, amount and scope of outward capital flows (Buckley et al., 2007).

Apart from that, because of SO-EMEs' affiliation with home institutions, when they invest overseas, they might be perceived by host-country institutions not simply as business entities, but also as political actors (Globerman and Shapiro, 2009; He and Lyles, 2008). Such a perception can pose challenges and more stressful institutional pressures to SO-EMEs' institutional processes in host countries (Luo and Rui, 2009; Peng et al., 2008). There can be concerns about the political rationale of SO-EMEs in attempted foreign acquisitions, such as CNOOC's failed acquisition of Unocal (Wan and Wong, 2009). From the host-country aspect, the state-driven objectives of EE SO-EMEs are often perceived as non-beneficial, or even harmful, to the host country (Globerman and Shapiro, 2009). Consequently, the institutional barrier for SO-EMEs to assume ownership and control in their investment in the host country will be high, which decreases the likelihood of a



productivity gain (Cui and Jiang, 2012).

Furthermore, different from private EME managers who formulate internationalization strategy to pursue global assets and markets, many SO-EME managers are often directly appointed by the state after serving as government officials (Brockman et al., 2013; Fan, Wong, and Zhang, 2007) and their companies go global following the guidance and capital control by the home state (Cui and Jiang, 2012). Correspondingly, SO-EME managers are incentivized not just by the prospect of increasing economic performance but also by satisfying the state's political and social objectives in making OFDI strategies (Cuervo-Cazurra and Dau, 2009). When making strategic decisions, managers of SO-EMEs may seek the possibility of further government support, which may be available in unexpected adverse circumstances. Such managerial cognition influences decision-makers' risk perception, and leads managers to underestimate risks in OFDI (Buckley et al., 2007). Risk perception has implications for EMEs' OFDI ownership decisions and would significantly influence EMEs' gain from OFDI, as with perceived government backing combined with below-market costs of capital, SO-EMEs are able to bear short-term loss and misleading OFDI strategies (Ahmed, Mohamad, Tan, and Johnson, 2002).

Thus the author concludes that as a representative of EMEs' affiliation relationship with the government, although EMEs' state ownership offers EMEs' institution-based resources, it also produces higher institutional pressures on them in both home and host countries, which negatively affects EMEs' productivity gain from OFDI (Brouthers, 2002; Brouthers and Hennart, 2007):

***Hypothesis 1:*** *State ownership moderates the effect of OFDI on an EME's productivity as such positive gains will be smaller for EMEs with state ownership than those without.*

### **3.2.2 Absorptive capacity and OFDI's productivity effect on EMEs**

The RBV suggests that firms develop dynamic capabilities based on existing resources. These resources are considered as a prerequisite, just as previous learning facilitates the learning and application of new, related knowledge (Barney, 2001; Deng, 2007; Teece, 2014). It is evident that EMEs invest overseas because they wish to acquire knowledge and learn new skills and capabilities in order to enhance their competitive advantages and productivity. But as (Kokko and Kravtsova, 2008) emphasize, technology diffusion and productivity premium are not automatic. Higher productivity gains should be expected for EMEs with higher R&D and absorptive capability, which helps them to recognize the value of new information, and assimilate and apply it to commercial ends (Cohen and Levinthal, 1990), or build the “ability to make effective use of technological knowledge in efforts to assimilate, use, adapt and change existing technologies” (Kim, 1997). Sawada (2010) indicates that the productivity effect of technology spillovers depends on MNEs' absorptive capacity. Therefore, EMEs with strong absorptive capability are more likely to capitalize on their assets, access or build up new resources, and enhance their productivity (Zahra and George, 2002).

In addition to home country institutional pressures they have adapted to, MNEs need particular firm resources and capabilities to deal with host country institutional hazards (Cantwell et al., 2010). Emerging from an under-developed home country institutional environment, EMEs are argued to have specific ownership advantages when operating in similar full-of-voids developing country institutional environments (Cantwell et al., 2010). However, it is mostly in developed countries where productivity spillovers happen (Audretsch and Feldman, 2004; Ramasamy et al., 2012). In these countries, firms compete based on knowledge-intensive resources and are stimulated by the coercive, normative, and mimetic isomorphic pressures to innovate for survival. Thus it could be expected that EMEs with stronger resources and absorptive capabilities are more likely to succeed in developed

institutional environments, exploit their well-developed institutional infrastructures and gain more positive productivity effect. Based on the above arguments, the author hypothesizes that:

***Hypothesis 2:** Absorptive capacity moderates the effect of OFDI on an EME's productivity as such positive gains will be greater, if an EME's pre-OFDI absorptive capacity is stronger.*

### **3.2.3 Entry mode and OFDI's productivity effect on EMEs**

The RBV indicates that entry strategy plays an important role when EMEs enter foreign markets with the intention of augmenting resources or capabilities (Ekeledo and Sivakumar, 2004; Stopford and Wells, 1972). Entry mode strategy differences affect subsidiaries' managerial pattern, corporate culture, and technique-learning channels, thus influencing subsidiaries' performance (Brouthers, 2002; Kim and Gray, 2008; Li, 1995) and EMEs' productivity gain from OFDI (Branstetter, 2006; Nocke and Yeaple, 2007).

Firms enter foreign markets using alternative strategies. Greenfield investment, in line with the RBV, acts as a channel of appropriating the potential externalities from the technology clusters and centers of innovation and excellence in host developed countries, i.e. the technological externalities associated with such location (Pradhan and Singh, 2008). Greenfield presence provides the proximity to innovative competitors, foreign R&D infrastructure, knowledge centers and research results. In addition, EMEs will gain access to information on changes in global consumer preferences, safety standards, packaging style, etc. Under the growing international competitive pressures, the EMEs in turn are expected to internalize this inflow of foreign information to improve their competitive capabilities (Deng, 2007). Furthermore, greenfield investment provides access to local knowledge if experienced local professionals work for EMEs. Local employees enable EMEs to develop networks of contacts with local intermediaries and consultants. This creates teams of

professionals from parent and local management, facilitating organizational learning and resource augmentation. Therefore, outward greenfield presence may help EMEs to learn from technological developments and strategies of competitors in foreign countries and move to a dynamic path of innovation (Deng, 2007). Huawei Technologies provides a good example of how foreign investment in R&D centers can help it be close to sources of knowledge and learning via greenfield investment in India, Germany, Japan, and the U.S.

While greenfield investment strategy involves the creation of a new organization, M&A takes place through the takeover (in part or whole) of an existing organization (Brouthers and Hennart, 2007). The RBV suggests that strategic M&A provides EMEs with a quicker way of acquiring innovative capabilities than undertaking long term in-house R&D efforts without any assured success (Deng, 2007; Pradhan and Singh, 2008). For EMEs with perquisite intermediate competencies, M&A allows them to achieve a higher bundle of resources or capabilities by integrating the target's firm-specific valuable resources like product development capabilities, process know-how, managerial expertise, marketing skills, relationships and networks. This transfer of knowledge from the target to the acquirer is direct and can be expected to create technological synergies that the parent company does not enjoy on its own. However, as firms are restricted in their structural and experiential capabilities to operate in foreign markets and their entry mode decisions are necessarily constrained by the resource capabilities and outcomes of past history (Aulakh and Kotabe, 1997), M&A cannot offer EMEs an immediate productivity growth if they are not capable enough to absorb and exploit resources from the targets.

To complement the RBV, IT provides an explanation of the role of entry mode in moderating OFDI's productivity effects on EMEs. It holds that a firm's entry mode choice and its impact is influenced by both nation- and firm-level institutional pressures (Dunning and Lundan, 2008a; North, 1990; Scott, 1995b). On one hand, EMEs have to adapt to host country

institutional pressures to gain legitimacy (Chan and Makino, 2007; Yiu and Makino, 2002). On the other hand, plenty of time is needed by EMEs to deal with the organization-level institutional and cultural conflicts brought about by M&A. This dilemma is common among EMEs in developed countries as they try to control and integrate firms in higher-level institutional and environmental environments. During the pre-acquisition phase, an EME's overpayment in bidding might be the biggest problem (Chen, Hope, Li, and Wang, 2011). However, during the post-acquisition phase, integration is a leading challenge for EMEs. From an institutional factor market standpoint, managerial talents are an important factor behind the growth of firms and economies. Lack of internationally managerial talents gives EMEs little confidence to efficiently integrate acquired targets and generating value (Birkinshaw, Bresman, and Nobel, 2010). EMEs cannot act quickly to impose their systems and rules on acquired target companies.

Thus overall, even though greenfield investment and M&A both offer channels for EMEs' technology sourcing (Chung and Alcácer, 2002; Vermeulen and Barkema, 2001; Wesson, 2000), compared to greenfield investment, M&A may bring in more challenges as it is costly in capital, time and efforts to achieve the corporate culture integration, and deal with the historical burdens for merged affiliates<sup>2</sup> (Buckley and Casson, 1998; Görg, 2000). The author hypothesizes that OFDI's productivity effect via M&A may be lagged:

***Hypothesis 3:*** *Entry mode moderates the effect of OFDI on EMEs' productivity as such gains will be lagged if M&A is chosen as the entry mode, although both M&A and greenfield investment generate positive productivity gains for EMEs.*

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<sup>2</sup> Note that the standard errors of the estimators for M&A are much larger than those for Greenfield Investment, which demonstrates large performance difference for investors via M & A.

### **3.2.4 Investment destination and OFDI's productivity effect on EMEs**

The RBV suggests that the inability of EMEs to build all needed knowledge and competences domestically forces them to acquire these resources overseas (Frost, 2001). For example, they might establish foreign R&D facilities to overcome locational disadvantages of the home base by tapping into locational advantages abroad (Frost, 2001). But resources, especially technology are often location-bounded, context-dependent and cumulative (Barney, 2001; Buckley et al., 2008; Taylor, 2002), in line with countries' specific location-advantages in the "OLI" paradigm (Buckley and Casson, 1976). Geographical proximity is crucial as different lines of innovative activities influence each other and knowledge spillovers are always geographically bounded (Jaffe, 1986; Jaffe, Trajtenberg, and Henderson, 1992). Given the tacit and uncodified nature of knowledge, it is very difficult for spillovers to be transmitted over geographical space. By contrast, knowledge is better diffused through frequent, direct, and face-to-face contact (Dosi, 1988). Innovation is expected to concentrate geographically in areas that provide a high level of local density of specialized resources, or agglomeration economies, which enhance and facilitate the innovation process.

While less developed countries, as latecomers, are cheap labor and natural resource abundant (Dunning, 1988), developed countries are rich in technology, as R&D has always been considered a domain of firms in technologically advanced and economically developed countries. Thus compared with OFDI in less developed countries which provides EMEs with economies of scale, OFDI in developed countries are expected to offer EMEs more productivity premium, via accessing inter-firm technological spillovers, specialized labor and intermediate inputs (Head, Ries, and Swenson, 1995).

This proposition is also supported by institutional theory which highlights that home

institutions shape the types of resources that firms develop (Peng et al., 2008). In particular, the institutional environment moderates the selection mechanisms through which competition selects firms (Aldrich, 1999). Thus, firms' resource endowments are an outcome of processes of resource accumulation and learning, which is path-dependent process conditioned by the institutional context in which firms operate (Tan and Meyer, 2010). In developed economies, institutional frameworks foster and stimulate market-based competition and firms' strategic innovation. Firms' primary challenge is to develop competitive resources and capabilities to outperform competitors in the market place (Peng, 2003). In contrast, less developed countries often lack sufficient market-supporting political, legal, and economic institutions (Hoskisson et al., 2013), and this works as a location-disadvantage that restrict the formulation of local firms' capabilities (Khanna and Palepu, 2000; Khanna and Rivkin, 2001). This reasoning suggests that more capabilities and productivity premium gains could be expected from OFDI in developed countries, rather than less developed countries:

***Hypothesis 4:** Investment destination moderates the effect of OFDI on an EME's productivity as such positive gains will be greater if EMEs invest in developed countries than in less developed countries.*

### 3.3 Data

The author tests the OFDI-led productivity change hypothesis relying on three disaggregated datasets. One is derived from the Annual Manufacturing Enterprises Survey conducted by China's National Bureau of Statistics. This dataset covers all state-owned enterprises (SO-EMEs) and non-SO-EMEs whose annual sales exceed RMB 5 million<sup>3</sup>. The data used in this paper ranges from 2002 to 2008<sup>4</sup>, covering more than 180,000 firms in 2002 and more than

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<sup>3</sup> In fact, the aggregated data on the industrial sector in the annual China's Statistical Yearbook and China's Industry Economy Statistical Yearbook are compiled from this data set.

<sup>4</sup> When estimating the probability to invest abroad in one year, we would use firms' production data in the

410,000 firms in 2008. This dataset includes three major accounting statements - the balance sheet, cash flow statement and income statement, incorporating more than 100 useful variables<sup>5</sup>.

However, noisy observations still exist in this dataset because of non-standardized financial statements or report errors from some firms. Thus cleaning the original data before doing further analysis is necessary. The author cleans the sample and removes the outliers by using the following filtering criteria. First, following (Feenstra, Li, and Yu, 2014), observations with missing primary financial variables (such as total asset, gross industrial output value and net fixed assets) are omitted. Second, firms with fewer than 8 workers are excluded from the sample because they are under a different legal regime (Brandt, Van Biesebroeck, and Zhang, 2012; Yu, 2015). Furthermore, observations satisfying the following criteria are excluded according to the basic rules of the Generally Accepted Accounting Principles: (a) Liquid assets are greater than total assets; (b) Fixed assets are greater than total assets; (c) Net fixed assets are greater than total assets; (d) An invalid founded time exists (i.e., the opening month is earlier than January or later than December.); (e) the firm's identification number is missing.

The second dataset used in the chapter comes from China's Ministry of Commerce. It covers rich information of EMEs that have conducted non-financial OFDI, including parent firm names, registration addresses, investment destinations, foreign subsidiary names, approval

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previous year, namely when the previous year is 2001, we would also utilize firms' production data in 2001. Thus more exactly speaking, the production data utilized in this paper ranges from 2001 to 2008.

<sup>5</sup> Because the intermediary input variable is missing in 2008, we impute this variable using a conventional method. According to China's Statistical Yearbook, value added = total output - intermediary input + value added tax payable. We can impute the missing data by the equation, intermediary input = total output - valued added + value added tax payable. Here we assume a firm's valued-added rate in 2008 equals to that in 2007. Depending on the value-added rate in 2007 and the total output in 2008, we can obtain firms' value added in 2008, and then firms' intermediary inputs in 2008 can be straightforwardly derived. Imputing the intermediary input data in 2008 helps extend the sample. If we only utilize the sample 2002-2007, our findings do not change significantly.



dates<sup>6</sup> and business scopes. All the EMEs engaging in non-financial OFDI from 2002 are covered in the dataset<sup>7</sup>. This enables us to investigate the OFDI-led productivity change at the country level.

Other firm investment information such as entry mode and investment amount is included in the third dataset, which was compiled based on local government reports, China's Ministry of Commerce website, and parent firm or subsidiary official websites. The collection rules of this dataset are as follows. First, the author collects such information for firms which are in both the first and second datasets<sup>8</sup>. Second, the information on investment amounts for firms is collected from official firm websites. If the investment amount information is unavailable in this way, the Ministry of Commerce and its local office websites are consulted. Press release is also used as a source of the investment amount information. Third, if a subsidiary is reported as being created, established or founded, then its entry mode is recorded as greenfield investment. If a subsidiary is announced to be established via merge or acquisition, its entry mode is noted as M&A.

Based on whether a firm invested abroad during the sample period, the author divides the whole sample into two subsamples, i.e., one with firms having OFDI and the other with firms having no OFDI. Table 2 provides a statistical summary of firms' OFDI status during the sample period. It is revealed that firms with OFDI have more employees, more capital, more intermediate inputs and higher productivity on average. They also have higher possibility of having export and R&D, compared with firms without OFDI.

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<sup>6</sup> Considering that the date on which an investment was approved differs from that on which the subsidiary was established, we spared no effort to search the internet (the information from the parent firm's website is labeled top priority) to confirm the exact date of subsidiary establishment. If the establishment date is unavailable, the year in which the investment was approved is used to approximate the year in which the subsidiary was established.

<sup>7</sup> In 2002, the former Ministry of Foreign Trade and Economic Cooperation of China and China's National Bureau of Statistics jointly developed China's first Outward Foreign Direct Investment Statistical System.

<sup>8</sup> We can merge the first and second dataset based on parent firm's name and the operation year.

**Table 2:** Summary statistics by OFDI status during the sample Period

Variable	Firms with OFDI		Firms without OFDI	
	Mean	Standard Deviation	Mean	Standard Deviation
Log(number of employees)	5.92	1.44	4.67	1.11
Log(capital stock)	11.58	1.93	9.74	1.43
Log(intermediate inputs)	11.34	1.74	9.73	1.37
Log(TFP)	2.09	0.51	1.90	0.56
Export dummy	0.71	0.45	0.25	0.43
R&D dummy	0.32	0.47	0.11	0.31

Note: As the R&D variable in 2004 is missing, I imputed the missing values with the average values in 2003 and 2005. As the R&D data in 2008 is not utilized in the following analysis, then it's not included here. That is, all the variables summarized here are ranging from 2002 to 2008 except for the R&D dummy. TFP presented in this table is calculated using an augmented Olley-Pakes approach which will be described in detail in the following section.

### 3.4 Methodology

#### 3.4.1 Measures

Following previous literature, the author deploys TFP to capture EMEs' productivity change (Damijan, Polanec, and Prasnikar, 2007), but the author avoids the simple Solow residual approach as it is not reliable enough and would cause biased productivity estimation results (Olley and Pakes, 1992). Instead, following Dai & Yu (2013), De Loecker (2007), De Loecker et al. (2012), Markuse (2004), and Yu (2015), the author has augmented the traditional Olley and Pakes (1992) approach by introducing OFDI and export dummies when the production function is estimated, because EMEs with or without OFDI and export may confront with different production environments and resource allocation processes.

Compared with the traditional simple OLS method, the augmented Olley-Pakes approach in TFP measurement has many advantages. First, this method utilizes the function of real current-period capital stock and investment<sup>9</sup> as the proxy variable for current-period

<sup>9</sup> We adopt the perpetual inventory method as the law of motion for real capital and real investment. The nominal

productivity<sup>10</sup>, which effectively controls for the unobservable productivity shock in the production function estimation, and reduces the simultaneity bias. Second, firms' survival probability is considered in the estimation of the production function, and thus the selection bias that only productive enterprises could survive in the markets can be effectively corrected. Third, the author takes into account the role of exporting and OFDI status when estimating the production function, which helps alleviate the production function estimation bias arising from omitting influential variables in the production function (De Loecker, 2011; De Loecker et al., 2012). The detailed measure of firm TFP will be illustrated in the appendix.

An EME's OFDI status is measured based on whether the firm has conducted OFDI. But as suggested by the literature, when measuring EMEs' OFDI status, the author includes firm features into the estimation model to alleviate the concern of endogeneity bias in that productive firms often self-select into investing abroad. Firm-level variables that have been considered to correct the unobserved endogeneity and heterogeneity when measuring EMEs' selection of OFDI include EMEs' pre-OFDI level of firm productivity (Helpman et al., 2004), inputs (capital, labor and intermediate inputs), firm-level strategies (pre-OFDI export and R&D decision), firm ownership (foreign-invested firm or state-owned enterprise), firm age (Wang et al., 2012), and dummy variables for year and industries<sup>11</sup>. Basile (2008) and Hamilton and Nickerson (2003) argue that, inputs and firm-level strategies need to be considered to ensure that the difference score in productivity is attributed to the impact of OFDI only. Head and Ries (2004) suggest that firms can adopt OFDI and export as substitutive or complementary strategy to engage in foreign markets. The author therefore treats pre-OFDI export decision as one firm strategy that may influence the firm's OFDI

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and real capital stock constructed following Brandt et al. (2012). We depend on the firm's own information in the dataset to construct firm's real depreciation ratio.

<sup>10</sup> Here is an implicit assumption, namely, firms which are more productive now would have higher expected return rates, and hence those firms would invest more in that period. Under a few assumptions of production technology, Pakes(1996) has verified this implicit assumption.

<sup>11</sup> In fact, to alleviate the influence of business cycle and control the industry heterogeneity, we estimate the propensity score on a year-by-year and industry-by-industry basis.

decision. The R&D decision is another firm strategy that may affect the firm's OFDI decision, as Lu, Liu, and Wang (2011) illustrate that firms in industries with higher levels of R&D intensity have higher probability to conduct strategic asset-seeking OFDI. In line with previous literature, firm-level inputs (i.e., capital, labor and intermediate inputs) have also been considered in the estimation model as they are important variables for firms' productivity change (Bascle (2008)).

To estimate the impacts of state ownership on the EME's productivity gain from OFDI, the author distinguishes between EMEs with state ownership and those without for further comparison (Amighini et al., 2013; Cui and Jiang, 2012). Following Cohen and Levinthal (1989), the author measures an EME's absorptive capability by its R&D. It is suggested that R&D that not only generates innovations, but also develops an ability to identify, assimilate, and exploit knowledge from the environment (Zahra and Hayton, 2008). The investment destination dummy (developed country / less developed country) is composed by whether they are non-OECD countries (coded "0") or OECD countries (coded "1"), while the entry mode dummy includes greenfield investment (coded "0") and merge and acquisition (coded "1") (Buckley et al., 2008; Pradhan and Singh, 2008).

### 3.4.2 Preliminary Analysis

In order to test whether firms that have conducted OFDI have higher productivity, the author sets the regression model as follows:

$$\ln TFP_{it} = \beta_0 + \beta_1 OFDI_{it} + \gamma X_{it} + \alpha_i + \eta_t + \varepsilon_{it} \quad (1)$$

where  $\ln TFP_{it}$  and  $OFDI_{it}$  represent firm  $i$ 's TFP, and OFDI status (coded "1" when the firm conducted OFDI in year  $t$ , and "0" otherwise) in year  $t$  respectively.  $X_{it}$  refers to a series of control variables, for instance, logarithms of capital, labour, intermediate input, and also ownership (SOE or foreign-invested firm), export or not (coded "1" when firm  $i$

exported in year  $t$ , and “0” otherwise) as well as R&D dummy (coded “1” when firm  $i$  has R&D input in year  $t$ , and “0” otherwise). To control for the learning-by-exporting effect (Delgado, Farinas, and Ruano, 2002; Lileeva and Trefler, 2007), a dummy variable (export or not) is included in the regression models. The empirical specification can be easily derived from the traditional log-linear Cobb-Douglas production function as suggested by the literature (Braconier, Ekholm, and Knarvik, 2001). Furthermore,  $\alpha_i$ ,  $\eta_t$  and  $\varepsilon_{it}$  represent the firm’s individual fixed effects, year fixed effects and the idiosyncratic error term respectively.

Table 3 reports the regression results of Eq.(1). According to Table 3, after controlling for capital input, labour input, ownership, export status, firms engaging in OFDI are verified to have higher productivity, compared to those that have not conducted OFDI. But this result shows only partial correlation between a firm’s OFDI status and productivity. (Helpman et al., 2004) demonstrate that the self-selection effect exists when it comes to the OFDI status, i.e., more productive firms would have a high possibility to conduct OFDI. Hence the productivity impact of OFDI would be overestimated if firm’s self-selection effect is not controlled for.

**Table 3:** Productivity difference between firms engaging in OFDI and not

Independent variable : $\ln TFP$	(1)	(2)
OFDI	0.016** (0.008)	0.010* (0.006)
Log(number of employees)	-0.028*** (0.000)	-0.043*** (0.001)
Log(capital stock)	0.060*** (0.000)	0.030*** (0.001)
Log(intermediate inputs)	0.028*** (0.000)	0.058*** (0.001)
Foreign-invested firm	0.006*** (0.001)	0.006* (0.003)
State-owned firm	-0.054*** (0.002)	-0.008*** (0.003)

Exporting firm	0.014*** (0.001)	0.018*** (0.001)
R&D dummy	0.020*** (0.001)	0.011*** (0.001)
Year-specific fixed effect	Yes	Yes
Industry-specific fixed effect	Yes	Yes
Firm-specific fixed effect	No	Yes
R-squared	0.126	0.131
Observations	1,521,763	1,521,763

Note: An augmented Olley-Pakes approach has been used here, and the figures in the parentheses are the robust standard errors. Because R&D variable is missing in 2008, I exclude 2008 observations in the estimation. \*, \*\*, \*\*\* indicate the significance levels at 10%, 5% and 1%, respectively.

### 3.4.3 Econometric Model

Disentangling correlations and causality in the OFDI-productivity growth nexus faces numerous challenges. As high productive firms are more likely to invest abroad, productivity growth may be endogenous and self-selected, and simple least squares estimation is invalid. Inspired by the literature (Bascle, 2008; Hamilton and Nickerson, 2003), the author uses propensity score matching to assess the causal effect of OFDI on parent firm productivity change. The matching technique creates the missing counter facts of firms that have foreign subsidiaries. It does so by pairing up a firm that conducts OFDI with a domestic plant (or several plants) with similar observable characteristics operating in the same sector and year, where similarities are determined on the basis of those plant features that have explanatory power in the OFDI decisions. Following De Loecker (2007) and Hayakawa, Matsuura, Motohashi, and Obashi (2013), propensity score matching is employed combining with a difference-in-difference approach. The OFDI-led productivity effect is hence inferred from the average divergence in the productivity paths between each firm having OFDI and its matched control plants, starting from the pre-OFDI year. This strategy allows us to control for observable and time-invariant unobservable differences between OFDI firms and their control plants (Heckman, Ichimura, and Todd, 1997).

The basic idea of propensity score matching is to take OFDI as a “treatment”, and then the productivity effect of OFDI can be captured by the average treatment effect on the treated (ATT). The author rescales the year that a firm just starts to invest abroad as period 0, and employs  $s \geq 0$  to represent the number of years after a firm starts to invest abroad. Variable “ $start_i = 1$ ,” represents that firm  $i$  starts to invest abroad. Then the productivity effect of starting to invest abroad could be expressed as:

$$E(\omega_{is}^1 - \omega_{is}^0 | start_i = 1) = E(\omega_{is}^1 | start_i = 1) - E(\omega_{is}^0 | start_i = 1) \quad (2)$$

The productivity is denoted by  $\omega^1$  if a firm starts to invest abroad, and by  $\omega^0$  if it does not. Equation (4) shows the average treated effect on the treated group (firms that start to invest abroad). The key point of getting the ATT is to find out the counter facts of the treated group, i.e., the control group. To achieve this purpose, propensity-score matching approach is utilized to construct the control group, following previous studies (De Loecker, 2007; Girma, Greenaway, and Kneller, 2004; Imbens, 2004; Rosenbaum and Rubin, 1983). Based on the information prior to the year when the firm started to invest abroad, the author has constructed the following model to estimate the propensity score:

$$\Pr(start_{i,0} = 1) = \Phi(h(X_{i,-1})) \quad (3)$$

where  $\Phi$  represents the cumulative density function of a normal distribution.  $X_{i,-1}$  refers to firm  $i$ 's characteristics as the control variables which could predict whether this firm would invest abroad in the next period. Firm pre-OFDI productivity, inputs (capital, labor and intermediate inputs), firm-level strategies (pre-OFDI export and R&D decision), firm ownership (foreign-invested firm or state-owned enterprise), firm age<sup>12</sup>, and dummy variables for year and industries serve this purpose, as discussed in Section 3.4.1.

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<sup>12</sup> Although there is an argument that the newness of the subsidiary could explain the improvement in firm productivity, the analysis still holds. First of all, it's true that subsidiaries started in different years probably take different technologies, but the estimation results still can show the positive productivity spillover effect through the backward linkage if parent firms benefit from engaging in OFDI. Furthermore, the analysis is to compare the productivity changes of parent firms with their counterfactuals (firms that operate in the same year and industry with the treatment group, but not engage in OFDI) rather than directly comparing firms with OFDI in different years. Moreover, the sample ranging from 2002-2007 (mainly between year 2004-2007), technologies used in a given manufacturing industry may be relatively similar during such a short time. What's more important, the results still hold if we restrict the estimation sample to year 2004-2007.

According to Becker and Ichino (2002) and De Loecker (2007), the following algorithms are employed to find out the control groups. Firstly, the observations are split into  $k$  equally spaced intervals depending on the propensity score<sup>13</sup>. Secondly, within each interval, the author tests whether the average propensity score of the experimental group (treated group) differs significantly from that of the control group. If the test fails in one interval, the interval would be split in half and tested again until the average propensity scores of treated and control groups do not differ significantly in each interval. Thirdly, the author tests whether the means of the covariates do not differ significantly between treated and control groups within each interval, and this is to check whether the balancing condition is satisfied. If the balance condition is rejected, the author will alter the functional form of the propensity score by adding higher-order covariates and interaction terms and redo the above steps. Fourthly, the nearest-neighbor matching method is employed to find out the counterfactual observations after the balancing condition is satisfied<sup>14</sup>.

After obtaining the control group, the author has pooled all the years and industries together and calculated the average TFP difference between the treated and control groups.  $C(i)$  denotes a set of firms that are matched to firm  $i$ , and  $N_i^C$  refers to the number of firms in  $C(i)$ . The weight of firm  $j$  that is matched to firm  $i$  is denoted as  $w_{ij} = 1 / N_i^C$ .  $\omega^1$  and  $\omega^c$  are the productivity of the treated firm and the firm in the control group respectively. Then the average treatment effect for year  $s$  on the treated can be written as follows:

$$ATT_{level}^s = \frac{1}{N_s} \sum_i \omega_{i,s}^1 - \sum_{j \in C(i)} w_{ij} \omega_{j,s}^c \quad (4)$$

The year-by-year productivity growth effect can be expressed as follows:

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<sup>13</sup> The initial value of  $k$  is set to 2.

<sup>14</sup> After sorting the sample by the propensity score, we search the counterfactual observations for the treated group by searching upward and downward. In fact, we find two firms for each treated one. Some other matching methods are also utilized, such as finding out one or four counterfactual observations for each treated firm, but the main results do not change significantly.



$$ATT_{growth}^s = \frac{1}{N_s} \sum_i [(\omega_{i,s}^1 - \omega_{i,s-1}^1) - \sum_{j \in C(i)} w_{ij} (\omega_{j,s}^c - \omega_{j,s-1}^c)] \quad (5)$$

It is obvious that the productivity effect estimated from Eq.(5) is actually the average difference of productivity growth between the treated group firms and the matched control group firms<sup>15</sup>.

Based on the above propensity-score matching method, Table 4 provides the matching results by year. Overall, the matching quality improves as the number of the treated group increases, which eliminates the influence of extreme values and outliers.

**Table 4:** Summary of the matching quality

Year	Number of New Firms Starting to Invest Abroad	Valid Number of New Firms Starting to Invest Abroad	Number of Firms Matched	Proportion of Firms Matched
2002	22	17	6	0.35
2003	28	19	12	0.63
2004	72	51	16	0.31
2005	280	263	120	0.46
2006	334	304	252	0.83
2007	399	362	303	0.84
2008	381	367	315	0.86
Total	1, 516	1, 383	1, 024	0.74

Note: The valid number of new firms starting to invest abroad restricts the sample to firms with observations in pre-OFDI year and the primary variables used for matching are not missing.

Table 5 compares the average TFP, capital, labor, intermediate input, and firm size between the treated and control groups. Before matching, compared with firms which have no OFDI, firms having OFDI are more productive and own more employees and capital on average. This confirms the self-selection effect for investing abroad. After matching, the difference is not statistically significant. As a result, the self-selection effect is substantially eliminated,

<sup>15</sup> We adopt firms that never invest abroad in the sample period as the control group. There is an alternative way to choose the control group, i.e., treating firms that just do not invest abroad in the given year as the control group. However, the latter approach inevitably neglects the lagged effect of investing abroad in the previous years. Therefore the estimation results are based on the former approach.

based on the propensity-score matching method.

**Table 5:** Comparison of characteristics between the treated and control groups

Variable	Before matching				After matching			
	Observation	Mean: treated group	Mean: control group	t-statistic	Observation	Mean: treated group	Mean: control group	t- statistic
Log(TFP)	1,383	2.09	1.90	13.73***	1,024	2.10	2.10	0.18
Log(number of employees)	1,383	5.92	4.67	28.15***	1,024	5.91	5.93	-0.95
Log(capital stock)	1,383	11.58	9.74	32.17***	1,024	11.51	11.54	-0.89
Log(Intermediate inputs)	1,383	11.34	9.73	30.26***	1,024	11.34	11.32	0.47
Exporting firm	1,383	0.71	0.25	34.55***	1,024	0.71	0.69	1.43
R&D dummy	1,383	0.32	0.11	27.43***	1,024	0.33	0.31	1.60

Note: The control group before matching is constructed using the average values of all the firms without OFDI. Statistics after matching is based on sample in the pre-OFDI Year. The number of observations refers to that of the treatment group. The results reported here after matching are based on 1:2 matching approach, that is, there are two counterfactual firms for each treated firm. The results are similar if I employ the 1:1 or 1:4 matching approach.

Next the author combines the propensity score matching and DID approaches to produce a more precise estimation of the productivity effect of OFDI (Blundell and Dias, 2009). The author compares an EME's productivity with its pre-OFDI level ( $s=-1$ ), where  $DID^s$  denotes the productivity growth difference in period  $s$  compared to the pre-OFDI level, for the treated and control groups.

$$DID^s = \frac{1}{N_s} \sum_i [(\omega_{i,s}^1 - \omega_{i,-1}^1) - \sum_{j \in C(i)} w_{ij} (\omega_{j,s}^c - \omega_{j,-1}^c)] \quad (6)$$

Considering the advantage of controlling for the pre-OFDI level of productivity after propensity-score matching, the author relies on the DID measure to produce main estimation results.

### 3.5 Estimation Results

#### 3.5.1 Results at the Overall Manufacturing Level

Table 6 demonstrates the estimation results at the overall manufacturing level. Panel (1) describes the impact of OFDI on the parent firm's level-value of productivity change over time, while panel (2) indicates the year-to-year productivity premium the new investor gathered over time. The results show that the productivity premium for EMEs that started to engage in OFDI increased gradually. Based on the DID approach, EMEs' average productivity gains from the first to the third year after starting OFDI grew from 4.9% to 14.5%, which is similar to the pure level effect. However, panel (3) shows that firms' year-to-year productivity growth after OFDI is not significant for all the years.<sup>16</sup>

**Table 6 : Productivity Effect of OFDI—at the Overall Manufacturing Level<sup>17</sup>**

<i>s</i>	0	1	2	3
(1) Results: TFP level	0.015	0.051***	0.080***	0.147***
Standard error	(0.011)	(0.015)	(0.023)	(0.039)
(2) Results: TFP growth: DID measure	0.014	0.049***	0.079***	0.145***
Standard error	(0.011)	(0.018)	(0.025)	(0.042)
(3) Results: TFP: year-to-year growth	0.014	0.030*	0.027	0.053*
Standard error	(0.011)	(0.017)	(0.021)	(0.029)
Number of treated units	1024	657	346	114

Note: This table reports the estimation results of OFDI's impacts on parent firms' productivity change. An augmented Olley-Pakes approach has been used here, and standard errors are reported in the parentheses. \*, \*\*, \*\*\* indicate significance level at 10%, 5% and 1%, respectively.

#### 3.5.2 State ownership and OFDI's productivity effect on EMEs

To test the first hypothesis that how state ownership moderates OFDI's productivity effect

<sup>16</sup> This finding is similar to the conclusion about the productivity effect of exporting by De Loecker (2007).

<sup>17</sup> In this table, the number of treated units is less than that of the treated ones after matching. There are several reasons for this situation. First, production information prior to the year when firms started to invest abroad is needed for matching, and firms with missing pre-OFDI information are omitted. Second, firms that cannot be matched are dropped because of the violation of the balance condition hypothesis. Third, when calculating TFP with the augmented Olley-Pakes approach, firms with missing covariates are deleted. These are also the cases for later estimations.

on EMEs, the author splits the sample into four groups based on state ownership<sup>18</sup> and EMEs' OFDI status and test whether there is a difference in productivity effects between private EMEs and SO-EMEs. The author treats SO-EMEs (private EMEs) with no OFDI in the sample period as the control group for SO-EMES (private EMEs) that conduct OFDI in that year, and the matching approach adopted in this chapter is on a year-by-year and industry-by-industry basis. The estimation results are listed in Table 6 below.

Table 7 and Figure 5 show that OFDI indeed significantly contributes to the productivity growth for private EMES. Their productivity benefits increase from 1.8% in the first year to 15.2% in the third year after conducting OFDI. While for SO-EMEs, the productivity growth effect is not significant. Therefore hypothesis 1 is supported according to this estimation result.

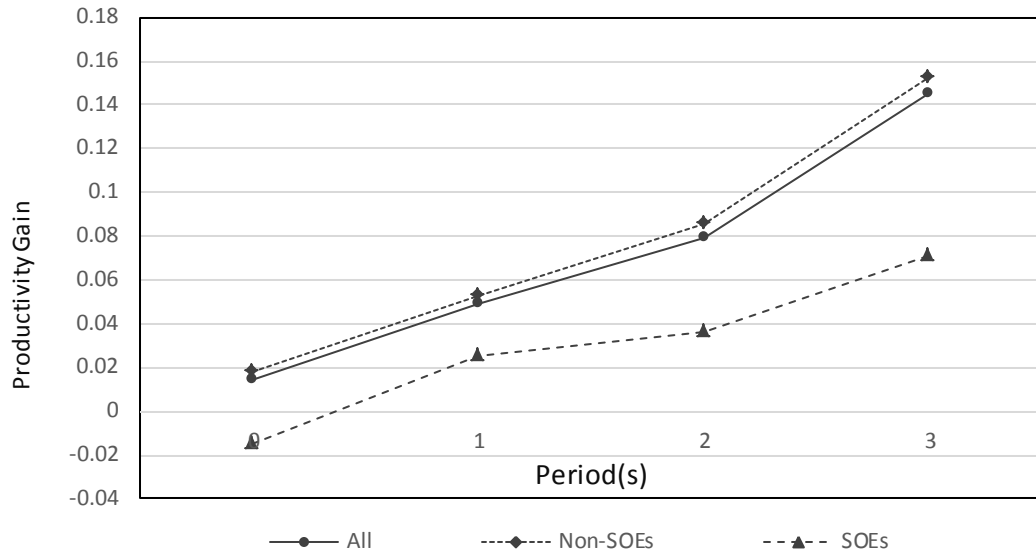
**Table 7:** Instantaneous and long-run productivity effect of OFDI by state ownership<sup>19</sup>

<i>s</i>	0	1	2	3
(A) Results for SO-EMEs				
(1) Results: TFP: DID measure	-0.015	0.025	0.036	0.11
Standard error	(0.026)	(0.041)	(0.147)	(0.131)
(2) Results: TFP: year-to-year growth	-0.015	0.046	-0.014	0.073
Standard error	(0.026)	(0.063)	(0.94)	(0.109)
Number of treated units	54	37	29	11
(B) Results for private EMES				
(1) Results: TFP: DID measure	0.018*	0.053***	0.086***	0.152***
Standard error	(0.010)	(0.018)	(0.024)	(0.041)
(2) Results: TFP: year-to-year growth	0.018*	0.026*	0.031	0.058**
Standard error	(0.010)	(0.014)	(0.020)	(0.029)
Number of treated units	916	598	302	97

Note: This table reports the productivity effect of starting to invest abroad grouped by ownership of parent firms. An augmented Olley-Pakes approach has been used here, and standard errors are reported in the parentheses. \*, \*\*, \*\*\* indicate significance level at 10%, 5% and 1%, respectively.

<sup>18</sup> By the official definition reported in *China Statistical Yearbook (2008)*, SO-EMEs include firms such as domestic SO-EMEs (code: 110), state-owned joint venture firms (141), and state-owned and collective joint venture firms (143), but exclude state-owned limited corporations (151), based on the registration type.

<sup>19</sup> According to *Statistical Bulletin of China's Outward Foreign Direct Investment 2008*, the share of number of SOEs is about 16.1% in 2008. Considering most of the financial investors are SOEs, limiting the sample to the manufacturing firms further decreases the share of SOEs.



**Figure 5:** Effect of state ownership on OFDI's productivity effect on EMEs

### 3.5.3 Absorptive capacity and OFDI's productivity effect on EMEs

To test whether a firm's absorptive capability matters, the authors splits the sample into four groups according to whether firms have conducted OFDI and whether they have had pre-OFDI R&D<sup>20</sup>. The matching approach is conducted on a year-by-year and industry-by-industry basis. The author treats firms with (without) positive R&D expenditure before year  $t$  as the control group for firms that starting OFDI in year  $t$  and with (without) positive R&D before year  $t$  respectively<sup>21</sup>. Table 8 illustrates the corresponding estimation results, and Figure 6 shows the comparative role of absorptive capability in moderating OFDI's productivity effect.

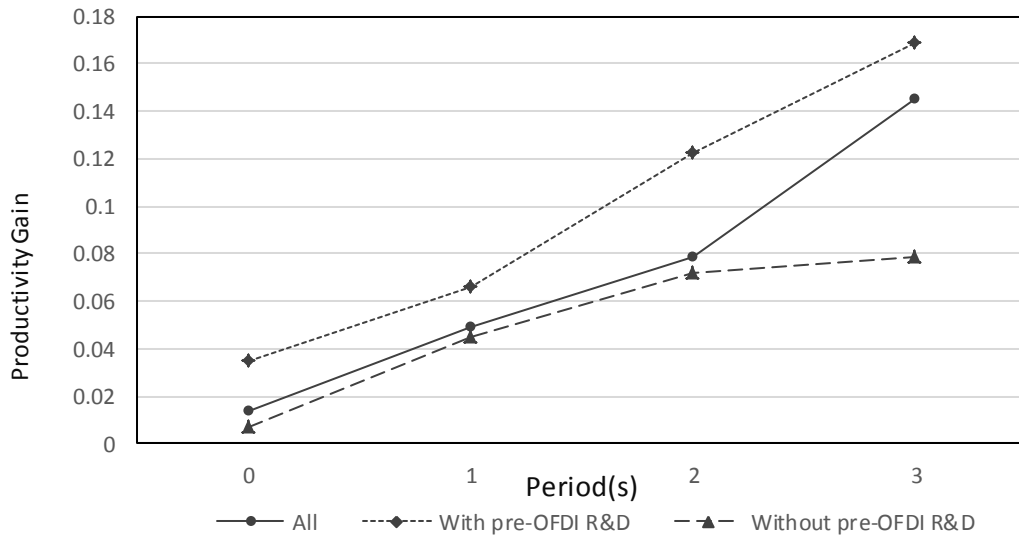
<sup>20</sup> To be accurate, for those that have never invested abroad, we split them based on whether they had R&D prior to that year within each industry for each year.

<sup>21</sup> An alternative method to test the role of absorptive capability in moderating the productivity effect of OFDI is to directly split the matched results from Section 5.1 into two groups by firms' pre-OFDI R&D status. But it may overestimate the productivity effect for firms that had pre-OFDI R&D, compared to the approach.

**Table 8:** Instantaneous and long-run productivity effect of OFDI by pre-OFDI R&D status<sup>22</sup>

<i>s</i>	0	1	2	3
(A) Results for firms with pre-OFDI R&D				
(1) Results: TFP: DID measure	0.035**	0.066***	0.122***	0.169***
Standard error	(0.014)	(0.022)	(0.030)	(0.050)
(2) Results: TFP: year-to-year growth	0.035**	0.028	0.048*	0.049
Standard error	(0.014)	(0.019)	(0.027)	(0.036)
Number of treated units	447	283	146	51
(B) Results for firms without pre-OFDI R&D				
(1) Results: TFP: DID measure	0.007	0.045*	0.072*	0.079
Standard error	(0.012)	(0.026)	(0.037)	(0.061)
(2) Results: TFP: year-to-year growth	0.007	0.031	0.029	0.011
Standard error	(0.012)	(0.019)	(0.030)	(0.039)
Number of treated units	521	321	174	55

Note: This table reports the productivity effect of starting to invest abroad grouped by pre-OFDI status. An augmented Olley-Pakes approach has been used here, and standard errors are reported in the parentheses. \*, \*\*, \*\*\* indicate the significance levels at 10%, 5% and 1%, respectively.

**Figure 6:** Effect of absorptive capacity on OFDI's productivity effect on EMEs

<sup>22</sup> Because of the advantage of controlling for the pre-OFDI effect more precisely, we only report the DID estimates here, which is similar to the TFP level effect (the same below). The summation of the number of the two group treated units is less than that the total number of the treated units in Table 5. There is an important factor that can explain this situation. When we conduct the matching estimation to the four groups on a year-to-year and industry-to-industry basis, some treated units could not be matched to the counterfactual firms because of the violation of the balancing condition. Therefore those firms which could not be matched were omitted when the estimation was performed. This was also the case for the majority of the following subsamples. Table 7 shows that the proportion of firms with positive pre-OFDI R&D expenditure was close to 50%, which was remarkably higher than the share of the overall manufacturing firms with R&D expenditure. The annual average share of firms with positive R&D expenditure is about 11% in the period 2002-2008.

It can be summarized from Table 7 and Figure 3 that on average OFDI promotes the parent firm's productivity growth no matter whether it has pre-OFDI R&D or not. However, the productivity effect differentiates significantly according to firms' absorptive capability. Based on the estimation results of the TFP, for EMEs that have positive pre-OFDI R&D expenditure, the productivity premiums are highly significant, and OFDI engagement brings in 2.1% higher productivity growth in the first year, than firms without OFDI. Till the third year after ( $s=3$ ) starting OFDI, the productivity premium for EMEs with strong absorptive capacity turns to be larger and reached 16.9%. However, for firms without pre-OFDI R&D, the productivity growth benefits brought by OFDI are only significant in some beginning years (the first and second year after OFDI, i.e., only significant when  $s=1$  and 2), and their productivity growth rate is noticeably lower than EMEs with positive pre-OFDI R&D expenditure. Thus hypothesis 2 is supported.

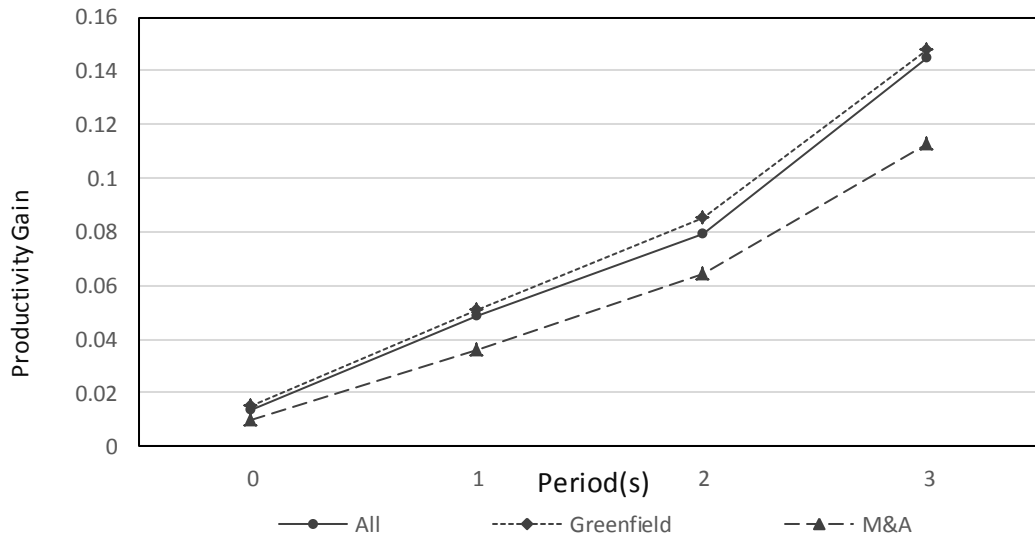
#### **3.5.4 Entry mode and OFDI's productivity effect on EMEs**

To identify how entry mode strategy moderates OFDI-led productivity growth, the author tackles the potential endogeneity issue of different entry modes (Shaver, 1998) based on the combination of propensity score matching and difference-in-difference method illustrated in Section 4 to examine the impacts of different modes on productivity for each group. The estimation results are illustrated below in Table 9 and Figure 7.

**Table 9:** Instantaneous and long-run productivity effect of OFDI by entry mode<sup>23</sup>

<i>s</i>	0	1	2	3
(A) Results for firms starting to invest abroad via Greenfield Investment				
(1) Results: TFP: DID measure	0.015	0.051**	0.085***	0.148***
Standard error	(0.011)	(0.020)	(0.025)	(0.042)
(2) Results: TFP: year-to-year growth	0.015	0.033*	0.028	0.054*
Standard error	(0.011)	(0.017)	(0.021)	(0.028)
Number of treated units	623	431	235	92
(B) Results for firms starting to invest abroad via M&A				
(1) Results: TFP: DID measure	0.010	0.036	0.064*	0.113*
Standard error	(0.013)	(0.022)	(0.034)	(0.058)
(2) Results: TFP: year-to-year growth	0.010	0.020	0.040	0.048
Standard error	(0.013)	(0.018)	(0.031)	(0.039)
Number of treated units	106	62	30	11

Note: This table reports the productivity effect of starting to invest abroad grouped by two kinds of entry mode strategy. An augmented Olley-Pakes approach has been used here, and standard errors are reported in the parentheses. \*, \*\*, \*\*\* indicate significance level at 10%, 5% and 1%, respectively.

**Figure 7:** Effect of entry mode strategy on OFDI's productivity effect on EMEs

It can be summarized from Table 8 and Figure 4 that the positive OFDI-led productivity growth effect occurs via both of these two entry modes, but during different periods. Via greenfield investment, the productivity effect appears from the first year after OFDI ( $s=1$ ), and this effect increases with time. Through M&A, OFDI's impact on productivity is not

<sup>23</sup> We drop observations that parent firms had two kinds of entry mode strategy in the starting year to avoid any confusion. In addition, firms whose initial entry mode cannot be identified are omitted.



significant until the second year after OFDI starts ( $s=2$ , only weakly significant)<sup>24</sup>. Based on the above estimation results, hypothesis 3 is supported.

### 3.5.5 Investment Destination and OFDI's productivity effect on EMEs

The author tests the hypothesis 4 via comparing the performance of EMEs having OFDI in developed countries only<sup>25</sup> and in less developed countries only<sup>26</sup>. The results in Table 10 and Figure 8 support the hypothesis by demonstrating that OFDI's productivity effect significantly exists whether EMEs invest in developed or less developed countries, but this OFDI-led productivity gain is clearly higher if investing in developed countries. Hence, hypothesis 4 is supported.

**Table 10:** Instantaneous and long-run productivity effect of OFDI by investment destination

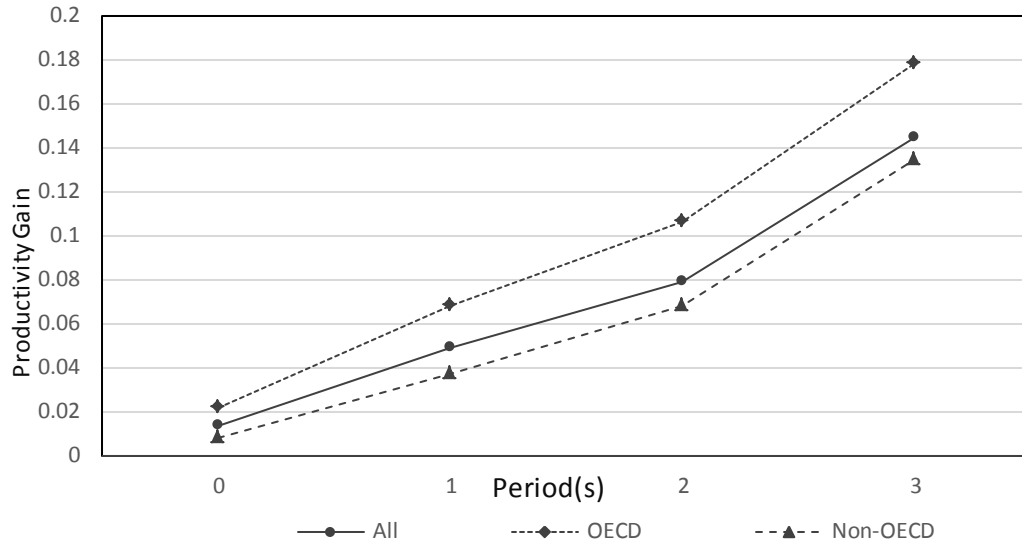
<i>s</i>	0	1	2	3
(A) Results for firms starting to invest only in developed countries				
(1) Results: TFP: DID measure	0.022*	0.068***	0.106***	0.178***
Standard error	(0.012)	(0.018)	(0.025)	(0.041)
(2) Results: TFP: year-to-year growth	0.022*	0.039*	0.033	0.055*
Standard error	(0.012)	(0.021)	(0.022)	(0.032)
Number of treated units	394	201	102	25
(B) Results for firms starting to invest only in less developed countries				
(1) Results: TFP: DID measure	0.008	0.037*	0.068**	0.135**
Standard error	(0.010)	(0.021)	(0.028)	(0.059)
(2) Results: TFP: year-to-year growth	0.008	0.024	0.026	0.052*
Standard error	(0.010)	(0.016)	(0.019)	(0.028)
Number of treated units	509	332	201	85

Note: This table reports the productivity effect of starting to invest abroad grouped by investment destination. An augmented Olley-Pakes approach has been used here, and standard errors are reported in the parentheses. \*, \*\*, \*\*\* indicate significance level at 10%, 5% and 1%, respectively.

<sup>24</sup>One thing needs to be emphasized. Because it is common for big companies instead of small ones to engage in M&A. Information for big companies is always more publicly available, as a result, missing entry mode status is more possible for greenfield investment. Therefore, we can replace missing entry mode status by greenfield investment to check whether the results for entry mode have a big difference. Fortunately, the results for entry mode are still robust.

<sup>25</sup> Developed countries used in this paper are restricted to those that had joined OECD before 2009, because of the sample period. For more information about the list of OECD members, please refer to <http://www.oecd.org/about/membersandpartners/list-oecd-member-countries.htm>

<sup>26</sup> In order to get rid of the mixed effect generated by firms that invest both in developed countries and in less developed countries during the starting year, we drop all the observations of those firms in this section.



**Figure 8:** Effect of investment destination on OFDI's productivity effect on EMEs

### 3.6 Robustness Check and Further Analysis

#### 3.6.1 An Alternative Measure of Total Factor Productivity

In order to check whether the above estimation results are robust to different productivity estimation methods, the author has re-estimated firms' productivity effect using the Levinsohn and Petrin (2003) approach (LP method). This method employs an EME's intermediate inputs as a proxy for unobservable productivity, to control for the correlation between firms' inputs decisions and invisible productivity, thus solving the simultaneity bias when estimating the production function. After the firm-level productivity estimation, the author tests the OFDI-led productivity effect using the same method in Section 5, and the results (see Table 11) are similar to those in Section 3.5.

**Table 11:** OFDI's productivity effect-productivity calculated by LP method

<i>s</i>		0	1	2	3
Results at Manufacturing level	(1) Results: TFP: DID measure	0.021	0.064**	0.128**	0.176**
	Standard error	(0.019)	(0.031)	(0.052)	(0.087)
	Number of treated units	1380	967	587	288
Results by different resources and institutions of parents' firms	(2-a) Results for firms with pre-OFDI R&D				
	Results: TFP: DID measure	0.038*	0.103**	0.176**	0.263**
	Standard error	(0.021)	(0.043)	(0.073)	(0.104)
	Number of treated units	501	325	182	71
	(2-b) Results for firms without pre-OFDI R&D				
	Results: TFP: DID measure	0.012	0.047*	0.089*	0.128
	Standard error	(0.017)	(0.028)	(0.042)	(0.086)
	Number of treated units	824	602	366	187
	(3-a) Results for SO-EMEs				
	Results: TFP: DID measure	0.014	0.085	0.12	0.155
	Standard error	(0.022)	(0.054)	(0.084)	(0.098)
	Number of treated units	55	46	34	22
	(3-b) Results for private EMES				
	Results: TFP: DID measure	0.022	0.063**	0.131**	0.189**
	Standard error	(0.018)	(0.029)	(0.051)	(0.086)
	Number of treated units	1273	881	528	253
Results by different investment strategy	(4-a) Results for firms via Greenfield Investment				
	Results: TFP: DID measure	0.021	0.065**	0.129***	0.183**
	Standard error	(0.018)	(0.029)	(0.049)	(0.087)
	Number of treated units	672	475	268	124
	(4-b) Results for firms via M&A				
	Results: TFP: DID measure	0.02	0.064	0.121*	0.163*
	Standard error	(0.019)	(0.041)	(0.065)	(0.092)
	Number of treated units	134	105	62	33
	(5-a) Results for firms starting to invest only in developed countries				
	Results: TFP: DID measure	0.026	0.086**	0.139**	0.201**
	Standard error	(0.020)	(0.034)	(0.054)	(0.088)
	Number of treated units	491	358	214	103
	(5-b) Results for firms starting to invest only in less developed countries				
	Results: TFP: DID measure	0.019	0.046	0.118**	0.159*
	Standard error	(0.018)	(0.029)	(0.050)	(0.086)
	Number of treated units	678	469	265	158

Note: This table reports the estimation results of OFDI's impacts on parent firms' productivity change. A Levinsohn and Petrin approach has been used here to estimate firm-level productivity, and standard errors are reported in the parentheses. \*, \*\*, \*\*\* indicate significance level at 10%, 5% and 1%, respectively.

### 3.6.2 Investment Destination Measured by Patent Application Per Capita

To test whether the estimation results of Section 5.5 are robust to different criteria of the host country division, the author has divided the sample into two groups based on host countries'

technology levels measured by patent applications per capita. the author has averaged each host country's patent applications per capita during the period 2002-2008, and then compared them with the overall average, to evaluate whether a country is high-tech or low-tech (a country with above-total-average patent application per capita is labeled as a high-tech country and otherwise a low-tech country). The estimation results are shown in Table 12 and they are again similar to those in Section 5.5.

**Table 12:** Estimation results by innovation level

<i>s</i>	0	1	2	3
(A) Results for firms starting to invest only in high-tech countries				
(1) Results: TFP: DID measure	0.021*	0.059***	0.102***	0.174***
Standard error	(0.011)	(0.019)	(0.024)	(0.041)
(2) Results: TFP: year-to-year growth	0.021*	0.036**	0.040*	0.066*
Standard error	(0.011)	(0.018)	(0.024)	(0.034)
Number of treated units	339	227	123	45
(B) Results for firms starting to invest only in low-tech countries				
(1) Results: TFP: DID measure	0.010	0.043**	0.066**	0.124***
Standard error	(0.011)	(0.017)	(0.027)	(0.043)
(2) Results: TFP: year-to-year growth	0.010	0.028*	0.021	0.044
Standard error	(0.011)	(0.016)	(0.020)	(0.027)
Number of treated units	634	405	211	65

Note: This table reports the productivity effect of starting to invest abroad grouped by investment destination. The two kinds of host countries, high-tech countries and low-tech countries are defined by the level of the host countries' patent application per capita under the Patent Application Treaty. An augmented Olley-Pakes approach has been used here, and standard errors are reported in the parentheses. \*, \*\*, \*\*\* indicate significance level at 10%, 5% and 1%, respectively.

### 3.6.3 One-Step System GMM Approach to Estimate the OFDI's Productivity Effect

Given the flexibility of one-step system-GMM, according to Blundell and Bond (1998) and Yu (2015), the author has examined OFDI-led productivity growth directly without the pre-estimation of EMEs' productivity<sup>27</sup>. Thus the coefficients of inputs and OFDI in production function are estimated simultaneously, as an extra robustness check.

<sup>27</sup> In fact, this is to treat OFDI as a component of TFP, and explicitly test whether starting to invest abroad can promote parent firms' productivity keeping other production factors unchanged.

The results in Table 13 show that at the overall manufacturing level, OFDI indeed promotes EMEs' productivity growth. But the productivity effect is moderated by firm heterogeneity and investment strategy. EMEs that have pre-OFDI R&D and non-SOE ownership gain more OFDI-led productivity growth. At the same time, investing in developed countries helps EMEs gain higher productivity premium. In all the estimation specifications, SO-EMEs are less efficient.

**Table 13:** Additional one-step system-GMM estimation

	(1)	(2)	(3)	(4)	(5)
Regressand: log(output)	Overall Effect	With pre- OFDI R&D	Without pre-OFDI R&D	Investment in developed countries	Investment in less developed countries
Lagged <i>start</i>	0.037*** (0.010)	0.047*** (0.014)	0.025 (0.027)	0.033*** (0.010)	0.028* (0.015)
Log(lagged output)	0.162*** (0.007)	0.177*** (0.015)	0.195*** (0.009)	0.160*** (0.007)	0.194*** (0.008)
Log(capital stock)	0.024*** (0.001)	0.021*** (0.002)	0.021*** (0.002)	0.024*** (0.001)	0.021*** (0.001)
Log(intermediate inputs)	0.739*** (0.005)	0.753*** (0.011)	0.692*** (0.009)	0.739*** (0.005)	0.704*** (0.007)
Log(number of employees)	0.080*** (0.002)	0.104*** (0.006)	0.083*** (0.004)	0.080*** (0.002)	0.089*** (0.003)
Log(lagged capital stock)	- 0.010*** (0.001)	- 0.019*** (0.002)	-0.005*** (0.001)	-0.010*** (0.001)	-0.007*** (0.001)
Log(lagged intermediate inputs)	0.018*** (0.004)	-0.015 (0.011)	-0.003 (0.006)	0.020*** (0.004)	-0.006 (0.005)
Log(lagged number of employees )	- 0.042*** (0.002)	- 0.044*** (0.004)	-0.031*** (0.003)	-0.042*** (0.002)	-0.032*** (0.003)
SOE indicator	- 0.101*** (0.006)	- 0.064*** (0.009)	-0.118*** (0.009)	-0.101*** (0.006)	-0.092*** (0.007)
Exporter indicator	0.010*** (0.003)	0.011*** (0.004)	0.033*** (0.004)	0.010*** (0.002)	0.029*** (0.003)
Observations	796335	169137	627198	796279	796293

Note: Figures in the parentheses are robust standard errors. Column (1) reports the estimation results at the whole manufacturing level. Columns (2) and (3) respectively use

samples that have R&D and have no R&D before OFDI, while Columns (4) and (5) report the estimation results that drop all the observations of firms that invest in developed countries, and less developed countries respectively. The year fixed effect and industry fixed effect have been controlled for in each regression. Only the lagged level value and difference value up to 2 periods of endogenous or predetermined variables, such as labor, intermediary input and capital stock are used as the GMM-type instruments in case of overfitting issue (Roodman, 2009). \*, \*\*, \*\*\* denote significance level at 10%, 5% and 1%, respectively.

### **3.7 Discussion and Conclusion**

Given the mixed empirical results on the OFDI-EMEs' productivity growth nexus, the author has established a novel theoretical framework by combining the RBV and IT, and assessed the moderating effect of firm heterogeneity, in terms of state ownership, absorptive capacity, entry mode and destination. This is the very first attempt to address such moderating effects. The author feels that this study has the following theoretical, policy and managerial implications.

Unlike previous studies that treat OFDI-EMEs' productivity growth as a direct linkage (Herzer, 2011), the contribution of this chapter firstly lies in identifying and documenting the moderating effect of firm heterogeneity on OFDI's productivity. The author's overarching argument is that although EMEs turn to be generally more productive after they conduct OFDI, this productivity effect varies depending on EME heterogeneity: 1) An EME without state ownership gains more positive productivity effect via OFDI than that with state ownership; 2) The stronger the EME's absorptive capacity, the more positive productivity premium it can get from OFDI; 3) In contrast with greenfield investment, the positive productivity effect an EME acquires via M&A is lagged; 4) An EME investing in developed countries only gains more from OFDI-led productivity enhancement. The new theoretical model developed in this chapter extends existing literature as it does not just look at the direct impact of OFDI on firm productivity, but examines how the OFDI-productivity relationship is altered when firm heterogeneity is introduced. This provides original contribution to the ongoing debate about OFDI's productivity effect.

Secondly, the author has focused on an emerging economy context and added to an under-researched area by complementing the RBV with IT, to predict EMEs' productivity gain from OFDI (Hoskisson et al., 2013; Peng et al., 2008). The author has discussed how EMEs' resource- and institution-based heterogeneity jointly affects OFDI's productivity effect. The author finds evidence that private EMEs can gain positive productivity effect via OFDI while SO-EMEs cannot. This result challenges the RBV which indicates that SO-EMEs with more institution-based resources should perform better in global markets (Wang et al., 2012), and support the author's argument that IT is needed to explain EMEs' productivity gains from OFDI. With affiliation to governments, SO-EMEs are confronted with more stressful home country institutional pressures as their high resource-dependence on home country governments pushes them in serving for national politic goals. At the same time, being recognized as political actors, host country institutions exert huge pressures on SO-EMEs, preventing them from performing resource-augmenting activities effectively (Cui and Jiang, 2012).

The author enriches the existing literature related to absorptive capability by recognizing its positive moderating effect on the OFDI-EMEs' productivity linkage, based on both the RBV and IT. The author confirms the role absorptive capability plays in shaping EMEs' recognition, assimilation and application to commercial ends of external valuable knowledge and information (Barney, 2001; Deng, 2007). Apart from that, this chapter suggests that EMEs' absorptive capability also works as resource-based capabilities, assisting EMEs in dealing with host country institutional pressures and surviving in asset-intensive developed institutions. Similarly, the moderating effect of OFDI destination has also been identified. In line with both the RBV and IT, the author demonstrates that developed countries with agglomerated high-tech and well-developed institutional infrastructure (Hoskisson et al., 2013), offer EMEs with more possibilities for productivity enhancement.

Last but not the least, the finding of the moderating effect of entry mode on OFDI's productivity effect calls for the incorporation of the RBV and IT again. It is proved that OFDI's productivity effect on EMEs via M&A will be lagged. It is contradictory with the previous literature based on the RBV which suggests that M&A is more efficient in asset-augmenting (Chung and Alcácer, 2002). OFDI's productivity effect brought about by M&A could be lagged for both country-level and firm-level conflicts of institutional construct. Compared to greenfield investment, M&A may bring more challenges for EMEs as it needs time and efforts in corporate culture integration, and has to deal with the historical burdens for merged affiliates<sup>28</sup> (Buckley and Casson, 1998; Görg, 2000).

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<sup>28</sup> Note that the standard errors of the estimators for M&A are much larger than those for Greenfield Investment, which demonstrates large performance difference for investors via M&A.



## **Chapter 4: Joint Role of Resource-based and Institutional Factors in Determining MNE Subsidiary's Bribing Strategy in Host Countries: An Empirical Test**

### **4.1 Introduction**

As a strategic reaction in corrupt business environment, the role of bribery has long been discussed (Birhanu, Gambardella and Valentini, 2015; Spencer and Gomez, 2011; Svensson, 2003; Martin, Gullen, Johnson and Parboteeah, 2007). The existing literature has so far identified the following main determinants of bribery: national culture (Martin et al, 2007), institutional features (Spencer and Gomez, 2011; Sanyal, 2005; Jeong and Weiner, 2012), and top management characteristics (Collins, Uhlenbruck, and Rodriguez, 2009). Apart from that, a firm's 'refusal power', formulated based on firm resources, has also been regarded as a determinant of firms' bribery, as it explains a large part of the variation in bribe payments across graft-reporting firms (Svensson, 2003).

In an international business context, as government corruption is pervasive internationally and has been institutionalized into host country environments, it is inevitable that MNE subsidiaries will have to encounter bribery requests in host countries. It is especially in corrupt host countries that are highly corrupt and thus corruption has been institutionalized to be illegal legitimacy in those contexts (Cuervo-Cazurra, 2016). But in a corrupt environment, MNEs are actually expected by government officials to pay different levels of bribery, according to MNEs' heterogeneity including MNEs' country-of-origin and their firm capabilities (Spencer and Gomez, 2011). MNE subsidiaries confront different levels of corruption pressures in a host country, and identifying and documenting who bribes and who should bribe and what factors determine MNE subsidiaries' bribing strategy is essential as it provides MNE subsidiaries with clues to make right strategic decisions to survive (Galang, 2012). Recent literature has recognized the role of institutional factors in MNE subsidiaries'

bribing strategy in host countries, e.g., the home country's participation of the OECD Convention for Combating Bribery, and the host country corruption environment (Spencer and Gomez, 2011). However, as argued in chapter 2, the institutional pressure MNE subsidiaries confront in a host country can be moderated by MNEs' holding of resources, and MNEs' strategy in a host country can be affected by both institutional and resource-based factors (Peng, etc., 2008). Therefore, it is essential to analyze the determinants of a firm's choice of bribery with a sound analytical framework beyond institutions. But so far there is still a lack of a comprehensive approach including both institutional and resource-based factors to explain MNEs' bribing strategy (Lee and Weng, 2013).

This chapter aims to fill in the above research gaps by combining the RBV and IT to generate an interactive model, illustrating how resource-based and institutional factors jointly determine an MNE subsidiary's strategic choice of bribery. This is also a test of the proposition 5c in model proposed in chapter 2 (Figure 3), i.e. institutional and resource-based factors jointly determine MNEs' OFDI strategy. The author argues that the heterogeneity of MNE subsidiaries' resources and perceived corrupt pressures work jointly, leading to differing bribery strategies in response to host country corruption. The author chooses MNE subsidiary managers' experiences and MNE subsidiaries' holding of internationally recognized quality certification (IQC) as the representative measures of MNE subsidiaries' intangible and tangible specific resources (Peng and Luo, 2000; Clougherty and Grajek, 2008), and chooses MNE subsidiaries' perceived pressure of host country corruption as the measure of host country institutional factors that might influence firms' bribing strategy (Spencer and Gomez, 2011). MNE subsidiaries' embeddedness in the home country anti-corruption practice will be employed by the author as a measure of MNE subsidiaries' specific institution-based resources accumulated in the home country institutions (Cuervo-Cazurra, and Genc, 2008). This theoretical framework then is tested using firm-level data from the World Bank enterprise surveys from 2006 to 2012, with a total of 2210 MNE

subsidiaries being included in the final sample. Both Tobit model and Heckman two-step approach are employed to carefully tackle MNE subsidiaries' potential self-selection to bribe. Based on the preliminary results from the Tobit regression, the author finds that MNE subsidiaries' perceived host country pressures and MNE subsidiary managers' experiences generate a positive effect on MNE subsidiaries' bribery choice, whereas MNE subsidiaries' holding of IQC and embedded home country anti-corruption practice produce a negative effect on MNE subsidiaries' willingness to pay bribes. A further analysis via the Heckman two-step approach suggests that managers' role in MNE Ss' bribing choice is insignificant, indicating that this part of the theoretical framework proposed in this chapter is not supported. A detailed analysis of the estimation results will be provided in the final discussion and conclusion part.

This chapter firstly contributes by combining resource-based and institutional factors in one framework and examining how they jointly affect MNE subsidiaries' bribing decisions. This framework is proposed and tested as the second part of the model developed in chapter 2 (Figure 3). Secondly, the author uses firm-, rather than country-level data, which provides an insight into the micro mechanism by which firm-level heterogeneity in resources and confronted institutional pressures influence MNE subsidiaries' choice of bribery (Birhaun, et al. 2015). Aidt (2009) and Campos, Dimova, and Saleh (2010), among others, argue that one reason why the country-level analyses yield inconclusive results is the endogeneity of corruption with respect to institutions and the lack of satisfactory instrumental variables at the aggregate. The use of firm-level data and appropriate instrument variables has tackled this problem. Thirdly, considerable research of government corruption suffers from the predominance of developed country studies, where the manner is relatively transparent and predictable, while few studies are conducted using the context of African countries (Pearce, Manz, and Sims Jr, 2008). The current study uses data from sub-Saharan African countries. These countries are highly corrupt, but have remained highly under researched in the management literature. As such, the current study sheds light on a geographic area that has

remained an unknown terrain to many management scholars. Finally, MNE subsidiaries might self-select to bribe or not bribe, depending on their holding of resources and perceived institutional pressures, and this self-selection bias might affect the rigor of the estimation results. As it is increasingly essential to tackle firms' self-selection issue in social science research (Clougherty, Duso and Muck, 2015), after basic estimation via the Tobit regression, the current study conducts further analysis via the Heckman two-step approach to check the robustness of the results.

The rest of this chapter is organized as follows. In the following section the author proposes a theoretical framework and corresponding hypotheses. A discussion of data follows. Next, the author discusses the preliminary results of the empirical analysis. In the fourth section, the author conducts further analysis via the Heckman two-step approach and then reports the results. The final section contains the author's discussion and conclusion.

## **4.2 Hypotheses: Resource-based and Institutional Factors as Determinants of MNE Subsidiary Bribery Decision**

The role of institutional factors on MNE subsidiaries' strategy making has been referred to before (Spencer and Gomez, 2011; Jeong and Weiner, 2012). As government corruption can be institutionalized as a fundamental component of an environment (Colins and Bruck, 2004), following IT, MNE subsidiaries face local isomorphic pressures to react to local bribery requests so that they can gain legitimacy to survive (Dimaggio and Powell, 1983). Collins and Uhlenbruck's (2004) study finds that even though the stated opinion regarding government corruption is negative in India, as corruption has been perceived as an institution and has been accepted as the 'it's the way things are done', firms are likely to comply with institutional demands associated with corruption. Additionally, as government corruption are perceived to be more take for granted in a corrupt context, firms will be confronted with pressures to comply with this illegal legitimacy and government officials may also impose more coercive pressures on MNE subsidiaries to engage in bribery.

Furthermore, MNE subsidiaries also suffer from mimetic pressures to participate in bribery if high performing domestic firms engage in government corruption. Thus, we conclude that in corrupt contexts where government corruption has been institutionalized to be an illegal legitimacy, MNEs are confronted with pressures to comply with bribery requests, and the higher the perceived pressures of corruption, the higher possibility MNE subsidiaries will pay bribes. Thus,

***Hypothesis 1:*** *The level of an MNE subsidiary's perceived pressure of host country corruption relates positively with its willingness to engage in bribery in the host country.*

However, existing studies tend to rely on IT when analyzing the determinants of MNE subsidiary bribery (Martin, etc., 2007), while resource-based factors have long been ignored. Firms' resources constitute and determine firms' strategy (Barney, 1991). When confronting bribery requests in host countries, firms' specific resources affect their 'refusal power' for bribery requests. Some resources such as MNE subsidiaries' product quality and technology help MNE subsidiaries avoid paying bribes with limited impacts on their business operations and performance. Other resources like firms' home-country institutional embeddedness, as a kind of institution-based resources, and managers' social ties with government officials could also significantly influence MNE subsidiaries' responses to bribery requests (Martin, Cullen, Johnson, and Parboteeah, 2007; Peng and Luo, 2000).

Mainstream international business theories suggest that MNEs develop resources and competitiveness from country-of-origin (Cuervo-Cazurra and Genc, 2008; Porter, 1980; Cantwell, Lundun and Dunning, 2010). As firms develop abilities to operate in a particular institutional environment over time via a learning-by-doing manner (Eriksson, Johanson, Majkgard, and Sharma, 1997; Johanson and Vahlne, 1977), MNE subsidiaries' home country institutional background generates assumptions and attitudes that influence the way in which MNE subsidiaries govern their relationships with external environments when internationalizing. MNE subsidiaries thus are offered specific institution-based resources

from their home country embeddedness when operating in host countries. On one hand, following the predictions of IT, MNE subsidiaries from less corrupt home countries are accustomed to the regulatory, normative and coercive norms in paying no bribes, and thus are less willing to bribe. On the other hand, MNE subsidiaries' home-of-origin works as an institution-based resources, affecting MNE subsidiaries' reactions to the corrupt environment. MNE subsidiaries from developed institutions with high anti-corruption practices tend to have strong ownership advantages in areas such as branding and advertising (Lall, 1993) and technology (Bartlett and Ghosal, 2000), and they have more refusal power to reject bribery requests. Thus,

***Hypothesis 2:** The level of an MNE subsidiary's home-country anti-corruption practices relates negatively with the MNE subsidiary's willingness to engage in bribery in the host country.*

According to the RBV, firms' tangible assets play a role in their bribery decisions in host countries. It is obvious that product quality is the most crucial firm resource for firm performance (Peng and Luo, 2000). As a signal of high quality, internationally recognized quality certification (IQC) constitutes MNE subsidiaries' essential firm-based capabilities, endowing MNE subsidiaries with strong 'refusal power' to negotiate with corrupt government officials. It not only provides a sign of high quality that helps reduce waste and increase productivity, but also can support creating more efficient or effective operations and improve employee's motivation, awareness, and morale (World Bank, 2014). Additionally, IQC (e.g., ISO 9000, 9002 and 14000) (World Bank, 2014), defined as an internationally recognized standard for quality and operation management, has been argued to work as an informal institution to alter the costs involved with FDI activity, via their quality-signaling, common-language, and conflict-settling properties (Clougherty and Grajek, 2008). It also works as an anti-corruption tool (Fan and Gaius, 2014), controlling and guiding the operations and management of MNE subsidiaries that under its system (Clougherty and Grajek, 2008). Thus, the author proposes the following:

*Hypothesis 3: An MNE subsidiary's holding of IQC will relate negatively with its willingness to engage in bribery.*

Additionally, managers represent a unique organizational resource (Daily, Certo, and Dalton, 1999), and their social ties, contacts, and networks are believed to affect firms' strategic choices and performance (Peng and Luo, 2000). In a corrupt environment, managers' intra-industry experience would be more essential, as a representative of nonmarket resource. Firstly, experienced managers have knowledge of the use of lobbyists. They know when, how and whom (both within the industry and within various governmental agencies) to bribe to get things done, thus are more confident to gain extra benefits from engaging in corruption. Secondly, managers with more intra-industry experience are said to have more social capital and political ties that could help political coalition building (Fainsod, 1940). Collins and Uhlenbruck (2004) thus assumes that having these types of connections will decrease the likelihood that the MNE subsidiaries will need to engage in corrupt transactions in order to gain access to government approvals, etc. However, their estimation results rejected this hypothesis by showing that actually, managers' intra-industry experience is playing a facilitating role in firms' participation in corruption payments. Experienced managers in corrupt contexts are more likely to accept the 'it's the way things are done' mentality regarding corruption. This is due to their embeddedness in those corrupt institutional environments which condones the perpetuation of government corruption (Collins and Uhlenbruck, 2004). Thirdly, because of the tight connections between experienced managers with local governments, local corrupt government officials will actually expect more bribery from MNE subsidiaries with experienced managers, especially managers that have bribed them before (Peng and Luo, 2000). Thus,

*Hypothesis 4: The MNE subsidiary top manager's experiences will relate positively with his/her willingness to engage in bribery.*

The analytical framework is illustrates as following (Figure 9)

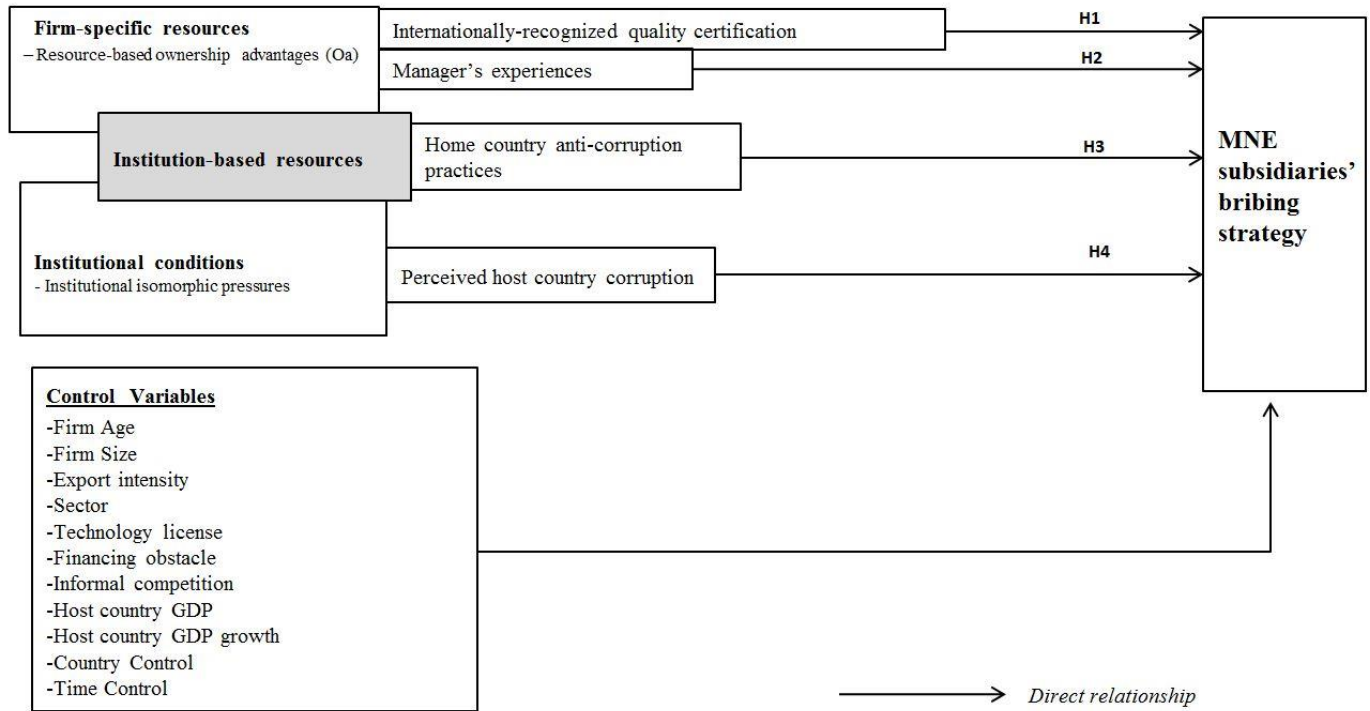


Figure 9: theoretical framework and hypotheses

### 4.3 Data

The study has been conducted using firm-level data mainly from the World Bank Enterprise Surveys. The World Bank periodically collects firm-level data from key manufacturing and service sectors around the world. Standardized survey instruments and a uniform sampling methodology are employed to yield a world comparable dataset by the World Bank. Private contractors, rather than the local government agency, are hired to conduct the survey on behalf of the World Bank in order to ensure the accuracy of answers to the sensitive bribery-related questions. Business managers and top owners are the main respondents, while company accountants and human resource managers are also invited to answer the questions



in the sales and labor sectors in the survey<sup>29</sup>.

Specifically, the dataset used in this chapter only covers firms with foreign ownership and operating in 40 host countries in Sub-Saharan Africa, to examine the influence of both resource-based and institutional factors on MNE subsidiaries' bribery decisions and their impacts on the bribery-performance nexus in a certain corrupt context<sup>30</sup>. The author restricts the sample to Sub-Saharan African countries firstly because that according to Transparency International's (2012) Corruption Perception Index, this area has a regional average corruption score of 3.3 of a maximum possible score of ten (with 1 being highly corrupt). This makes the region to be the most corrupt area worldwide with the average corruption rank for Sub-Saharan Africa countries being 112 out of 176 captured in the survey. The selection of this region as the research context thus fits this study's research purposes well. Secondly, as firms in this area are less studied in the MNE literature and this area is an increasingly important investment destination for MNEs, research that focusing on this context sheds lights on uncovering the black box of MNEs' survival paths in this under researched area. Furthermore, economic conditions and social backgrounds are very similar for countries in this region, and region-specific time-varying unobservable factors are eliminated when the author restricts the sample to this region<sup>31</sup>. The overall year span ranges from 2006 to 2012.

After deleting unusable observations, the author has a final sample of 2210 MNE

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<sup>29</sup> The data is publicly available on the World Bank Web site <http://www.enterprisesurveys.org/>, and the data collection methodology is also accessible from this website.

<sup>30</sup> The World Bank conducts enterprise surveys in 43 out of the 48 Sub-Sahara African countries (Comoros, Equatorial Guinea, Sao Tome and Principe, Seychelles and Somalia are excluded), including Angola, Botswana, Kenya, Mali, etc. Firms surveyed in Sudan, South Sudan and Zimbabwe can't be figured out the foreign ownership, therefore those firms are also not included in the sample.

<sup>31</sup> In addition to firms in Sub-Sahara Africa, home country name can also be figured out for firms in Eastern Europe and Central Asia in the 2005 World Bank Enterprise Survey dataset. Actually the results are very similar if we add those observations to the sample.

subsidiaries with 19 having two-period observations<sup>32</sup>. MNE subsidiaries come from four main sectors: manufacturing, service, construction, and transportation<sup>33</sup>. Treating 2006 as the benchmark year, variables such as host country GDP are deflated by the corresponding host country CPI/GDP deflators and converted to US dollars based on the exchange rate in 2006. Host country GDP, CPI/GDP deflators and exchange rates with the US dollars are taken from the World Development Indicators database<sup>34</sup>.

#### 4.4 Preliminary Analysis: Estimating the resource-based and Institutional factors determinants of MNE subsidiary's bribery

To estimate how the institutional and resource-based factors affect MNE subsidiaries' bribery decisions, the author sets the empirical model as follows:

$$Bribery_{ijt} = \Theta \cdot Resource_{ijt} + \partial_0 \cdot Corrup_{ijt} + \Psi \cdot X_{ijt} + \eta_j + \mu_t + \varepsilon_{ijt} \quad (7)$$

*Bribery<sub>ijt</sub>* refers to the amount of bribery paid by firm *i* of industry *j* in year *t*; *Resource<sub>ijt</sub>* refers to an MNE subsidiary's three main resources, namely, home-country anti-corruption practice<sup>35</sup> (Cuervo-Cazurra and Genc, 2008), its holding of IQC (Clougherty and Grajek, 2008) and its top manager's experience (Hitt, Biermant, Shimizu, and Kochhar, 2001; Peng and Luo, 2000). As the law-and-order index from the International Country Risk Guide measures a home country's law enforcement and social order, it shapes a MNES's bribery behavior. Therefore it is chosen as a proxy for the home country's anti-corruption practices.

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<sup>32</sup> In fact, if we drop firms with two-period observations in the pooled regression, the estimation results are almost the same because of the small proportion of those kinds of firms.

<sup>33</sup> The industry code systems in the 2006 survey and following surveys are not all the same, we reconcile the industry code by recoding the 2006 sector based on coding system after 2006 according to the sector description.

<sup>34</sup> For more information about the WDI database, please refer to <http://data.worldbank.org/data-catalog/world-development-indicators>.

<sup>35</sup> It's also a kind of home-embedded resource for a MNE subsidiary.

As inspired by Clougherty and Grajek (2008), the author also employs internationally recognized standard for quality and operation management as firm-specific resources. The author emphasizes the manager's experience as it is a valuable and inimitable firm resource accumulated over time, which can work as a substitute for institution in underdeveloped areas (Wang et al., 2012).  $Corrup_{ijt}$  refers to MNE subsidiary's self-perceived pressure for host-country corruption, which has been widely recognized as an institutional factor affecting a MNE subsidiary's bribery strategy (Spencer and Gomez, 2011).

$X_{ijt}$  represents the control variables which may affect an MNE subsidiary's bribery decision. The MNE subsidiary's size (Baucus and Near, 1991; Martin et al., 2007), age (Lee and Weng, 2013), technology (Bharadwaj, 2000; Koellinger, 2008), export intensity (Svensson, 2002) and its confronted financing obstacle and informal competition (Martin et al., 2007) are controlled for as they affect firm performance and influence the firm's choice of bribery. Furthermore, following Lee, Oh and Eden (2010), the author extends control variables to host-country GDP and GDP growth rate to rule out the effect of overall macroeconomic growth.  $\eta_j$ ,  $\mu_t$  and  $\varepsilon_{ijt}$  are industry, year fixed effect and error term, respectively. As bribery takes only non-negative values, the author uses the Tobit model to estimate Eq. (1) (Cameron and Trivedi, 2005).

Table 14 presents the variable definitions and Table 15 shows the summary statistics and correlations of the main variables used in this paper. Inspired by Aiken and West (1991) and Dawson and Richter (2006), the variable of government corruption is centered when incorporated to the regression to make it easier to interpret interactions <sup>36</sup>.

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<sup>36</sup> The other two categorical variables of financing obstacle and informal competition are also centered to coincide with the government corruption variable on scale. Actually, if we standardize the variables, the results are still robust.

Table 14: Definition of variables

Variables	Definition of variables
1. Performance	Sales per employee (USD)
2. Technology license	A dummy variable that takes 1 if a firm at present uses technology licensed from a foreign-owned company, excluding office software
3. Firm size	Logarithm of the number of employees of the firm
4. Log(firm age)	Logarithm of the firm's age created by subtracting the year of establishment from the survey year
5. Export intensity	The ratio of the firm's export to its sales
6. Financing obstacle	Level of 'availability and cost to financing' as an obstacle
7. Informal competition	Level of 'practices of competitors in the informal sector' as an obstacle
8. log (Host country GDP)	Logarithm of the host country's gross domestic production
9. Host country GDP growth	Host country's GDP growth rate
10. Firm bribery	Percentage of sales paid by a foreign invested firm to government officials "to get things done"
11. Government corruption	Corruption pressure that foreign invested firms perceive in the host country, also named perceived host country corruption pressure.
12. IQC	Internationally-recognized quality certification (such as ISO 9000, 9002 or 14000, etc.).
13. Manager's experience	Logarithm of years of experiences foreign invested firms' top manager have in this sector

Note: Treating 2006 as the benchmark year, variables such as sales, host country GDP are deflated by the host country CPI/GDP deflator and converted to US dollars based on the exchange rate in 2006. The host country GDP, CPI/GDP deflator and exchange rate with the US dollars are taken from the World Development Indicators database.

Table 15: Summary statistics and correlations

Variable	Obs	Mean	1	2	3	4	5	6	7	8	9	10	11	12	13
1.Performance	1946	9.87	1												
2.Technology license	2229	0.07	0.04	1											
3.Firm size	2212	2.98	0.12	0.18	1										
4.log(Firm age)	2206	2.41	0.12	0.07	0.32	1									
5.Export intensity	2223	5.53	-0.01	0.08	0.29	0.10	1								
6.Financing obstacle	2206	2.78	-0.12	0.02	-0.11	0.00	-0.02	1							
7.Informal competition	2195	2.80	-0.02	-0.03	-0.03	0.08	0.00	0.28	1						
8.log(Host country GDP)	2229	23.19	0.09	0.03	0.14	0.17	0.00	-0.06	0.01	1					
9.Host country GDP growth	2174	1.86	-0.07	0.06	0.10	-0.01	-0.02	-0.07	-0.12	-0.08	1				
10.Firm bribery	2045	1.91	-0.05	0.03	-0.03	-0.05	0.00	0.08	0.05	-0.03	0.06	1			
11.Government corruption	2134	2.73	-0.05	-0.07	0.07	0.12	0.04	0.26	0.29	0.09	-0.04	0.10	1		
12.IQC	2162	0.18	0.12	0.23	0.26	0.10	0.16	-0.07	-0.02	0.01	0.03	0.00	-0.01	1	
13.Manager's experience	2166	2.41	0.07	0.03	0.17	0.50	0.10	0.03	0.13	0.11	-0.09	0.00	0.10	0.06	1

Note: Firm size is measured by logarithm of the number of firm employees. Government corruption is measured by firm self-perceived host country government corruption.

#### **4.5 Estimation Results**

Table 16 reports the estimation results of Eq. (1). As shown in the Table, perceived host country corruption pressures generate positive effect on firms' bribery choice. P value of variable "perceived host country corruption pressure" is highly significant, indicating that hypothesis 1 is supported. Hypothesis 2 is also verified. MNE subsidiaries with a higher home country anti-corruption index, *ceteris paribus*, are less likely to engage in bribery. This indicates that MNE subsidiaries' home country anti-corruption practices play a significant role in shaping an MNE subsidiary's overseas behavior. Meanwhile, the role of MNE subsidiary's holding of IQC on its bribery is significant, indicating that MNE subsidiaries' resources do affect their bribery decisions. An MNE subsidiary with IQC, which is treated as a kind of firm-specific informal anti-corruption resource (Clougherty and Grajek, 2008), bribes less when other variables are controlled for. This lends support to hypothesis 3. For hypothesis 4, although the coefficient of the manager's experience is positive, it is not very significant. This shows the complexity of the role of the manager's experience.

Table 16: Tobit model estimation for the determinants of MNE subsidiaries' bribery decision

Dependent variable: Firm bribery	(1)	(2)
Home country law and order		-1.601*** (-35.94)
Internationally-recognized quality certificate		-0.460*** (-3.51)
Manager's experience		0.011* (1.68)
Perceived host country corruption pressure	0.711*** (29.58)	0.772*** (33.83)
Firm size	-0.101** (-2.36)	-0.042 (-0.95)
Technology licensed from a foreign-owned company	0.828*** (6.04)	1.305*** (8.88)
Financing obstacle	0.418*** (18.17)	0.530*** (25.16)
Informal competition	0.411*** (20.90)	0.449*** (22.33)
Export intensity	2.858*** (16.70)	2.428*** (13.92)
Log(firm age)	0.007 (1.54)	0.003 (0.70)
Log(Host country GDP)	-1.438*** (-66.62)	-0.143*** (-19.21)
Host country GDP growth rate	-0.295*** (-9.05)	-0.384*** (-11.40)
Year-fixed effect	Yes	Yes
Industry-fixed effect	Yes	Yes
Pseudo R-squared	0.030	0.032
Observations	1962	1903

Note: Robust t-statistics in parentheses; \*\*\*, \*\* and \* indicate significant at 1%, 5% and 10% significance level, respectively.

#### 4.6 Further Analysis: Correcting MNE Subsidiaries' Self-selection to Bribe

It is increasingly important to tackle the self-selection issue in social science research. In order to get better performance, MNE subsidiaries self-select to bribe or not bribe, depending on their own resources. Thus, inspired by Heckman (1979), Hamilton and Nickerson (2003) and Clougherty, Duso and Muck (2015), the author employs the Heckman two-step approach (type-2 Tobit model) to tackle the potential self-selection effect of bribery. A binary selection model (Cameron and Trivedi, 2005) is utilized to estimate the probability for MNE subsidiaries to engage in bribery. Here the author supposes whether an MNE subsidiary would engage in bribery can be determined by a latent variable  $V_{it}$ . The MNE subsidiary engages in bribery if and only if  $V_{it} \geq 0$ . Therefore, as the first step of type-2 Tobit model, bribery participation can be expressed by:

$$Bribery_{it} = \begin{cases} 1 & \text{if } V_{it} \geq 0 \\ 0 & \text{if } V_{it} < 0 \end{cases} \quad (7)$$

For the second step, the extent of bribery is modelled as a linear function of associated variables.

Specifically, the author employs the Probit model to estimate the following selection equation:

$$P(Bribery_{ijt} = 1) = Pr(V_{it} \geq 0) = \Phi(\tilde{\Theta} \cdot Resource_{ijt} + \tilde{\delta}_0 \cdot Corrup_{ijt} + \tilde{\Psi} \cdot X_{ijt} + \eta_j + \mu_t + \varepsilon_{ijt}) \quad (8)$$

where  $Resource_{ijt}$ ,  $Corrup_{ijt}$  and  $X_{ijt}$  have the same meaning as those in Eq.(7);  $\Phi(\cdot)$  is a cumulative density function of a normal distribution. After estimating the Probit model of Eq. (8), the author can obtain the inverse mills ratio based on the estimation results, and incorporate it into the second step. It should be noted that the Heckman two-step estimation requires one excluded variable that affects an MNE subsidiary's bribery decision, but does not appear in the second stage (Cameron and Trivedi, 2005). The author chooses MNE



subsidiary age to serve this purpose. Previous studies have found that MNE subsidiary age is associated with its bribery decision (Lee and Weng, 2013); at the same time, the correlation of MNE subsidiary age and the extent of bribery is very weak (0.06), which indicates that MNE subsidiary age can be excluded in the second stage estimation. To control for year and industry unspecified factors, the author includes year dummy  $\mu_t$  and industry dummy  $\eta_j$  in both steps. Then the author can figure out the fitted extent of bribery based on the second stage estimates.

The Heckman two-step approach based on Eq. (9) is employed to tackle the possible self-selection bias and the estimation results are shown in Table 17. From Column (1), MNE subsidiaries with a high home country anti-corruption index and IQC are less likely to engage in bribery. By contrast, MNE subsidiaries facing high host-country-corruption pressures, severe financing obstacle, more fierce informal competition and with high export extensity have a higher possibility to bribe. The author then includes the computed inverse mills ratio derived from the first-step estimates in the second-step Heckman estimation, and the results are shown in Column (2). Thereafter, the author can obtain the firm-level fitted extent of bribery, which is used in the rest of estimation for correcting self-selection bias. The estimation results based on this fitted extent of bribery show that only MNE subsidiaries' perceived host country institutional pressures and MNE subsidiaries' holding of IQC could generate effect on their bribery decisions in the host county institutional environment. The further analysis, which has corrected bribery's self-selection bias, confirms that only hypotheses 1 and 3 in this chapter are finally supported.

Table 17: Heckman two-step estimates of bivariate selection model

Heckman two-step:	(1)	(2)
Dependent variable	Bribery dummy	Extent of bribery
Home country law and order	-0.418*** (-4.80)	-0.082 (-0.17)
Internationally-recognized certification	-0.184** (-1.97)	-0.390** (-2.07)
Manager's experience	-0.000 (-0.03)	0.007 (1.02)
Perceived host country corruption pressure	0.155*** (6.06)	0.256*** (2.93)
Firm size	0.025 (0.81)	0.014 (0.20)
Technology licensed from a foreign-owned company	-0.189 (-1.20)	0.490 (1.33)
Financing obstacle	0.065** (2.56)	0.092 (1.56)
Informal competition	0.064*** (2.63)	0.083 (1.50)
Export intensity	0.525** (2.37)	0.471 (0.95)
Log(Host country GDP)	-0.097** (-2.49)	-0.679*** (-7.16)
Host country GDP growth rate	-0.121*** (-6.52)	-0.025 (-0.34)
Log(firm age)	0.005* (1.66)	
Inverse mills ratio		2.087** (2.36)
Year-fixed effect	Yes	Yes
Industry-fixed effect	Yes	Yes
R-squared	0.182	0.250
Observations	1779	848

Note: Robust t- and z-statistics in parentheses in Step 1 and Step 2 respectively; \*\*\*, \*\* and \* indicate significant at 1%, 5% and 10% significance level, respectively. R-squared reported in the first column is the Pseudo one.

#### **4.7 Discussion and Conclusion**

Different from the previous literature that estimates the influence of resource-based and institutional factors on firms' bribery in an isolated way, the author deploys both Tobit model regression and Heckman two-step approach to investigate the determinants of MNE subsidiaries' bribing strategy, considering the roles of both institution and resources simultaneously. The study differs from the existing literature as it has tackled firms' self-selection to bribe, and pointed to the importance of looking beyond IT for understanding MNE subsidiaries' choice of bribery via emphasizing the role of firm resources (Wang, 2012).

Utilizing the firm-level data from the World Bank enterprise surveys from 2006 to 2012, this chapter has identified and documented how MNE subsidiaries' resources (e.g., holding of IQC and managers' experiences) and institutional factors, including different levels of government corruption in home and host countries, jointly affect an MNE subsidiary's bribing choice in a corrupt host country environment. The overarching argument of this chapter is that MNE subsidiaries' bribery decisions in host countries are not only determined by host country institutions, but also by embedded home country institutions and MNE subsidiaries' resources. The findings are theoretically meaningful as it assists us in explaining the heterogeneity of MNE subsidiaries' choice of bribery in a comprehensive way, with careful consideration of both institutional and resource-based factors (Spencer and Gomez. 2011; Birhanu et al., 2015; Martin, et al., 2007; Svensson, 2003; Jeong and Weiner, 2012).

Based on the regression results, the author has identified the influential role of host country institutional factors on MNE subsidiaries' choice of bribery, and this is consistent with Spencer and Gomez (2011) and Martin et al., (2007). The author finds that perceived pressures of government corruption in a host country stimulate MNE subsidiaries' conduction of bribery. This result is in line with IT's prediction, which argues that MNEs are

confronted with institutional pressures and MNE subsidiaries need to comply with local isomorphic pressures to gain legitimacy (Dimaggio and Powell, 1983). But the estimation results of home country's role in MNE subsidiaries' bribing decision based on the Tobit model regression are different from those based on the Heckman two-step regression. The Tobit model estimation results show that home country anti-corruption works significantly to prevent MNE subsidiaries from paying bribery. However, after correcting MNE subsidiaries' self-selection to bribe, the estimation results based on the Heckman two-step model suggests that MNE subsidiaries' home county anti-corruption has a negative influence on their bribing, although it is insignificant. This result is different from Spencer and Gomez's (2011), suggesting a need of careful reconsideration of the moderating effect of MNEs' home country institution on their internationalization activities.

Additionally, the author has examined the effect of MNE subsidiaries' holding of IQC and MNE subsidiary managers' experiences on MNE subsidiaries' choice of bribery and found that IQC acts as firms' specific resources and informal institutions to assist MNE subsidiaries in refusing bribery requests. The results support the author's theoretical argument that MNE subsidiaries' holding of resources generates significant impact on their internationalization strategy. However, manager's role in MNE subsidiaries' bribing strategy seems to be different based on different estimation results. Such inconsistent results may not be surprising as there has been much debate on the role of managers' experiences in their companies' bribing strategy. For instance, Collins and Uhlenbruck (2004) argue that firms with experienced managers contain higher levels of social capital, know with whom to deal to 'get things done' and therefore are less likely to engage in corrupt transactions. Other scholars suggest that managers with more experiences and local ties tend to pay more bribes because they need to engage in corruption to keep these strong ties, and local corrupt government officials expect more bribery from MNE subsidiary managers who have bribed them before (Peng and Luo, 2000). Hence, estimation results in this chapter, combined with the previous conclusions, ask for more detailed and comprehensive research on the role of

managers' experiences in MNEs' bribing strategy. A future research direction can draw on this and go in depth by distinguishing managers' characteristics, e.g., gender, home-of-origin, age, and family ties with government officials.

## **Chapter 5: Integration of Resource-based and Institutional Factors to Moderate the Effectiveness of MNE Subsidiaries' Bribing Strategy in Host Countries: An empirical test**

### **5.1 Introduction**

Government corruption is generally thought to have negative consequences on economic development (Knack and Keefer, 1995; Mauro, 1995; Shleifer and Vishny, 1993). However, beginning with Leff (1964) and Huntington (2006), some scholars suggest that corruption might raise business performance through corrupt practices such as bribery, as it enables some individuals or organizations to avoid bureaucratic delay, and gain preferential treatment (Lee and Weng, 2013; Méon and Weill, 2010).

Coupled with continued globalization, the international pervasiveness of government corruption in recent decades increases the likelihood that international enterprises will encounter government rent-seeking, and stimulates scholars to declare the importance of capabilities to deal with corruption for MNE subsidiaries' success (Galang, 2012; Kwok and Solomon Tadesse, 2006; Oliver and Holzinger, 2008; Uhlenbruck et al., 2006). In such a corrupt business environment, bribing becomes a MNE subsidiary's informal strategic choice, and it is meaningful and emergent for MNE subsidiary managers to know what explains the heterogeneous effectiveness of bribery on MNE subsidiary performance, and why government corruption could be exploited by some MNE subsidiaries to realize great success, while detrimental for others.

The existing literature has so far identified some determinants of bribery (Martin et al, 2007; Spencer and Gomez, 2011; Sanyal, 2005; Jeong and Weiner, 2012; Collins, Uhlenbruck, and Rodriguez, 2009; Svensson, 2003). However, there is still a lack of a comprehensive analysis relevant theories (Lee and Weng, 2013), and so far little is known of how bribery affects a

firm, especially an MNE subsidiary's performance (Birhanu et al, 2015; Spencer and Gomez, 2011). This chapter aims to fill in the above research gaps by combining the RBV and IT to generate an interactive model, illustrating how resource-based and institutional factors interactively moderate the effect of bribery on MNE subsidiary performance in a typical corrupt context. The theoretical framework is tested using firm-level data from the World Bank surveys from 2006 to 2012, with a total of 2210 MNE subsidiaries being included in the final sample. The author argues that the heterogeneity of MNE subsidiaries' resources and perceived corrupt pressures leads to differing bribery strategies in response to host country corruption, and these two variables then interactively moderate the impact of bribery on MNE subsidiary performance.

Chapters 3 and 4 have tested the first and second part of the model proposed in chapter 2 (Figure 3). Following them, this chapter 5 will test the third part of the model (Figure 3), and will focus on testing the proposition 5d in chapter 2, i.e. integrative role of resource-based and institutional factors in moderating the effectiveness of MNEs' strategy on performance.

The author contributes to the literature about the role of bribery in international business in the following ways. First, in contrast to the rich and fruitful findings about the antecedents and influential factors of bribery (Martin et al, 2007; Collins et al, 2009), little is known about the role of bribery in firm performance. Given that bribery is an important 'strategic choice' for firms in a corrupt context (Spencer and Gomez, 2011), it is crucial to investigate its effectiveness in line with a comprehensive model.

Second, the existing literature tends to investigate the bribery-firm performance relationship in an isolated way, i.e. assessing bribery's impact from the perspective of IT (Spencer and Gomez, 2011; Jeong and Weiner, 2012), controlling for other important variables such as firm resources. However, the author argues that resource-based and institutional factors co-exist and interact with each other, producing a joint effect on firm performance. Failure to capture this interactive relationship will lead to a biased or at least incomplete assessment of

the impact of bribery.

Third, similar with what we have discussed in chapter 4, this chapter will also deploy data from sub-Saharan countries as these highly corrupt countries provide us a perfect context to investigate the determining and influencing mechanisms of corruption and bribery. This work contributes a lot as these countries are highly corrupt but remain under researched in international business literature (Pearce et al., 2008).

The rest of this chapter will be organized as follows. In the following section the author proposes a theoretical framework and corresponding hypotheses. A discussion of data and methodology follows. Next, the author presents and discusses the results of the empirical analysis. In the fourth section, the author conducts robustness checks. The author then concludes by discussing and outlining the contributions of this study to existing knowledge, and drawing useful practical recommendations.

## **5.2 Hypotheses: Interactive Role of Resource-based and Institutional Factors in Moderating the Effectiveness of MNE Subsidiaries' Bribing Strategy**

Theoretically, the role of the institutional environment and firm resources in firms' strategy decisions and performance has been widely recognized (Peng, etc., 2009; Gupta, Smith, and Shalley, 2006; Brouthers and Hennart, 2007), so have their separate roles in moderating the strategy-performance nexus (Newber, 2007; North, 1990; Scott, 1995). However, Brouthers, Brouthers, and Werner (2008) propose a resource-based institutionally adjusted model which stresses that adding the moderating influence of the national institutional environment to a resource-based perspective could better explain the effectiveness of strategies on firm performance. In line with this, the author incorporates the interaction terms between the institutional and resource-based factors and identify their interactive role in moderating the bribery strategy - performance relationship. The author asserts that the heterogeneity of the bribery-performance relationship is a function of the interaction between MNE subsidiary



resources and their perceived pressures of corruption.

Bribery, as a responding strategy in a corrupt institutional environment, is firstly a direct financial cost (Luiz and Stewart, 2013) and indirect reputation cost (Spencer and Gomez, 2011). It is damaging because of higher transaction costs due to the secrecy and uncertainty that necessarily accompany bribery and the fact that benefits gained from bribes are not enforceable in courts ((Shleifer and Vishny, 1993). For MNE subsidiaries that cannot transfer this kind of cost to benefits and achieve extra profits, bribery brings negative effects on their survival (Fisman and Svensson, 2007). But IT suggests that MNE subsidiaries are forced to bribe under corrupt institutional pressures, and active bribery is used as a defensive method to avoid sanctions or other punishments (Wu, 2005). Svensson (2003) argues that the effectiveness of bribery on performance actually depends on firm resources (Fisman and Svensson, 2007; Gaviria, 2002; Martin et al., 2007; Svensson, 2003; Wang and You, 2012). Different from previous literature, this chapter not only emphasizes the moderating role of MNE subsidiary resources on the effectiveness of bribery, but also moves forward to find out whether the influence of resources on the bribery-performance nexus is further moderated by the level of MNE subsidiaries' perceived corrupt pressures.

### **5.2.1 Perceived host country corruption, home country anti-corruption practice and effectiveness of bribery.**

Argued by Cuervo-Cazurra (2006), firms can transfer disadvantages derived from poor home country institutions to advantages, i.e., MNE subsidiaries from highly corrupt home countries are offered stronger capabilities for dealing with or exploiting corruption and bribery in a similar institutional environment. As MNE subsidiaries from home countries with low anti-corruption practices internationalize, their managers can easily maneuver in host countries with poor governance, because of their understanding of norms (e.g. government corruption) for conducting business and corresponding strategy there (Cuervo-

Cazurra, 2006). In contrast, managers of MNE subsidiaries from countries with high anti-corruption practices face challenges of altering their deep-seated assumptions about the institutional background and confront troubles in dealing with bribery requests (Prahalad and Hammond, 2002). They will even be punished for bribing host country government officials because laws in their home countries forbid them from such a practice (Cuervo-Cazurra and Genc, 2008).

However, as MNE subsidiaries from countries with high anti-corruption practices are less capable of exploiting bribery, they are actually requested less by host country corrupt government officials, and are more tangible resources-intensive to keep good performance even if they refuse bribery. Government officials nowadays increasingly face uncertainty when demanding bribes (Gyimah-Boadi, 2004; Widjajabrata and Zacchea, 2004). As a result, local officials will adjust tactics and pressures to MNE subsidiaries according to their assessment of targeted MNE subsidiaries' potential reactions, as practically some MNE subsidiaries acquiesce to bribery demand quietly while others are likely to seek protections via reporting illegal bribery demands and appalling to other agents (Rodriguez, Uhlenbruck, and Eden, 2005; Uhlenbruck et al., 2006). Many times, government officials adopt heuristics such as stereotypes to forecast an MNE subsidiary's likely behaviour and evidence shows that they impose different levels of pressure on subsidiaries based on the MNEs' home country institutional environments (Kostova and Zaheer, 1999). Thus officials will be less aggressive when pressuring MNE subsidiaries from countries that have institutionalized anticorruption norms, while more aggressive when targeting MNE subsidiaries from relatively corrupt home countries. The cost of refusing bribery requests will be more serious for MNE subsidiaries from more corrupt home countries.

Thus, when operating in highly corrupt host countries, MNE subsidiaries from countries with low anti-corruption practices are confronted with more institutional pressures, but possess home country institution-based resources to take advantage of bribery for better performance, while MNE subsidiaries from less corrupt countries are more likely to succeed

via refusing bribery. Apart from that, as firm level heterogeneity in MNE subsidiaries' perceived corrupt pressures influences the moderating effect of home-of-origin on the bribery-performance nexus, the author estimates home-of-origin's real moderating role via controlling for an MNE subsidiary's level of perceived institutional pressures, and asserts that,

***Hypothesis 1:** An MNE subsidiary's perceived pressures of corruption in the host country integrate with its home country anti-corruption practices to negatively moderate the effectiveness of bribery on performance.*

### **5.2.2 Perceived host country corruption, MNE subsidiaries' holding of IQC and effectiveness of bribery.**

MNE subsidiaries' holding of resources acts as 'refusal power' to moderate their perceived pressures in corrupt environments (Svensson, 2003). Product quality is a fundamental and traditional strategy for good sales performance (Peng and Luo, 2000), and IQC has been argued to be one type of firm-specific resource, as it not only provides a sign of high quality that helps reduce waste and increase productivity, but also supports creating more effective or efficient operations and improving employees' motivation, awareness, and morale (World Bank, 2014). MNE subsidiaries with IQC can claim that they have a documented quality certification that is enforced and followed, ensuring that their products are made to exact specifications (GBUERIN and Rice, 1996). Via its efficient signaling approach, IQC is reported to act as the common-language mechanism facilitating communications between firms (Terlaak and King, 2006), and stimulating firm innovation performance (Terziovski and Guerrero, 2014). This firm-based capability/resource provides MNE subsidiaries with strong power to refuse the bribery requests from government officials, as these firms do not expect to earn money from exploiting bribery, but their core resources and high quality products.

IQC's role as informal and decentralized institutions has also been recognized (Clougherty and Grajek, 2008; Terlaak, 2007). The internationally recognized-quality certification system, as an informal institution, retains promise as an anti-corruption tool (Fan and Gaius, 2014). As bribery activities are punished by the internationally recognized-quality certification system and the economic cost and reputational risk of bribery are high, firms that hold IQC in this status are less likely to pay bribes. Apart from that, highly corrupt government officials expect relatively less or no bribes from MNE subsidiaries with certification and high-tech. Thus the cost for MNE subsidiaries with IQC to refuse bribery may be relatively small. Based on the above arguments, as the level of MNE subsidiaries' perceived corruption also affects the effectiveness of IQC, the author generates the following hypothesis,

***Hypothesis 2:** An MNE subsidiary's perceived pressures of corruption in the host country integrate with its holding of IQCs to negatively moderate the effectiveness of bribery on performance.*

### **5.2.3 Perceived host country corruption, managers' experiences and effectiveness of bribery.**

Managers represent a unique organizational resource (Daily et al., 1999), which is essential in an environment full of institutional voids. Experienced managers have stronger political ties which help political coalition building, and have knowledge of the employment of lobbyists (Fa insod, 1940). Dahan (2005) describes non-market capabilities as being mainly technical-economic expertise in lobbying governments, but this particular non-market capability of a firm actually depends on its managers' experiences and networks with government officials. On one hand, it is inevitably costly for experienced managers to keep strong ties with governments and organizations to make bribery more effective, and the risk and results for them to stop bribery are huge and detrimental (Rowley, et al., 2000). On the

other hand, managers' experiences and ties positively yield the consequences of bribery as they provide knowledge and political networks, and give MNE subsidiaries signals about when, how and whom to bribe. Thus extra profit gains from experienced managers' bribing activities are expected. The positive association of managers' experiences with the effectiveness of bribery will even be enlarged in an environment where institutions are undeveloped, and where managers' interpersonal relationships work to substitute for formal institutions (Peng and Luo, 2000). Under certain conditions of perceived corruption pressures, the effectiveness of bribery on MNE subsidiary performance can be substantially moderated by managers' experiences:

***Hypothesis 3:*** *An MNE subsidiary's perceived pressures of corruption in the host country integrate with its manager's experiences to positively moderate the effectiveness of bribery on performance.*

In line with the above hypothesis, the author's theoretical framework (Figure 10) is demonstrated as follows:

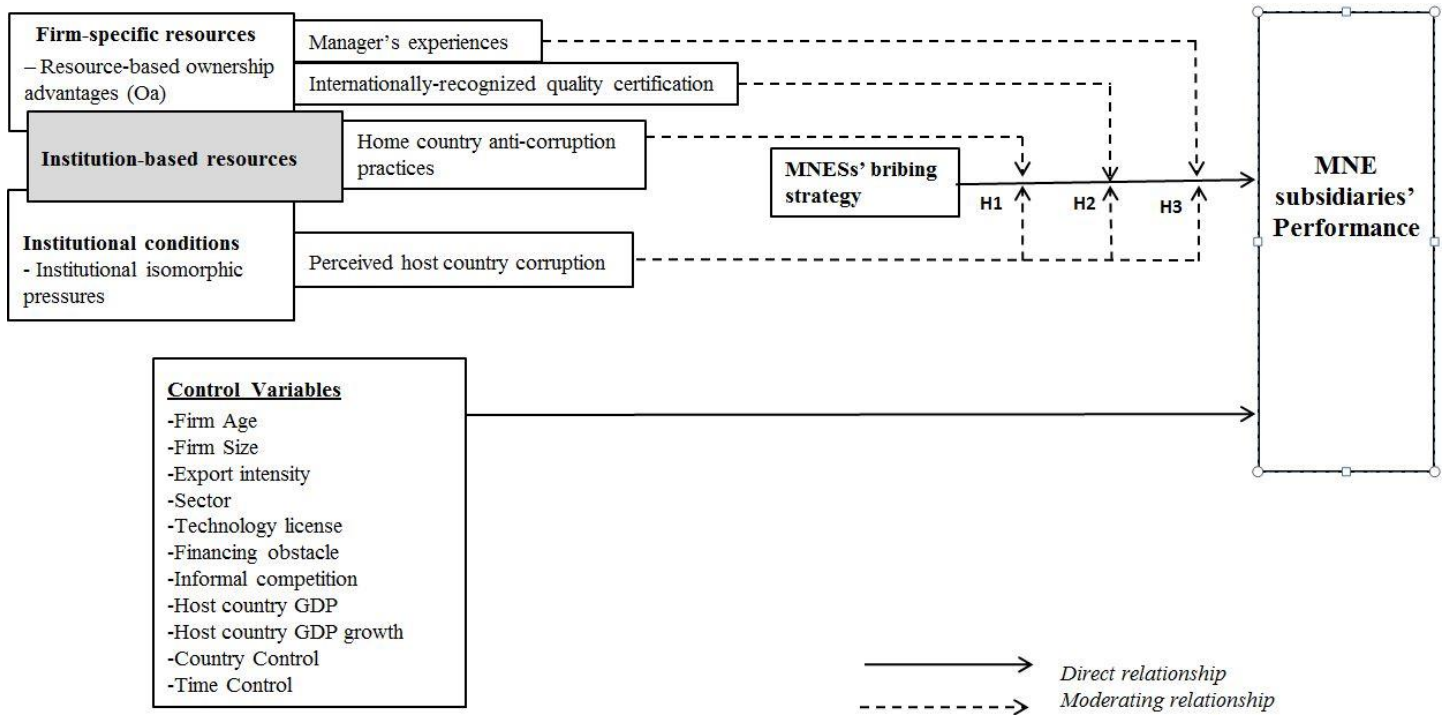


Figure 10: theoretical framework and hypotheses

### 5.3 Data and Methodology

#### 5.3.1 Data

The current work was conducted using the firm-level data from the World Bank Enterprise Surveys, which has been illustrated in detail in Chapter 4. The data collection methods, variable definitions, and summary statistics and correlations could be found in sections 4.3 and 4.4 (Table 14 and Table 15).

#### 5.3.2 Econometric Model: Estimating the interactive role of resource-based and institutional moderators on bribery-performance nexus

In chapter 4, the author has analyzed in detail the utilization of the Heckman two-step approach (type-2 Tobit model) to tackle the potential effect of MNE subsidiaries' self-

selection to bribe. Based on Eq. (8) and Eq. (9), the author has corrected MNE subsidiaries' self-selection to bribe and figured out the fitted extent of bribery based on the two-step estimation.

Then, to estimate the moderating effect of MNE subsidiary resources on the bribery-performance nexus with the host country corruption status under control, the author sets the regression model as follows, based on the fitted extent of bribery:

$$Y_{ijt} = (\beta_1 \cdot Bext_{ijt} + \beta_2 \cdot Bext_{ijt} \cdot Corrup_{ijt} + \beta_3 \cdot Corrup_{ijt}) \cdot (1 + \beta_4 \cdot Resource_{ijt}) + B \cdot X_{ijt} + \eta_j + \mu_t + \xi_{ijt}$$

(9)

where  $Y_{ijt}$  means MNE subsidiary  $i$ 's (in industry  $j$ ) performance in year  $t$ , and is measured by the logarithm of sales per employee.  $Bext_{ijt}$  refers to the fitted extent of bribery paid by MNE subsidiary  $i$  of industry  $j$  in year  $t$ ;  $Corrup_{ijt}$  represents the MNE subsidiary's self-perceived corruption status;  $Resource_{ijt}$  refers to the MNE subsidiary's three main resources as in Eq. (1), namely, the home country anti-corruption practice, the MNE subsidiary's holding of IQC and the MNE subsidiary manager's experience.

$X_{ijt}$  indicates other control variables which may affect firm performance, such as the MNE subsidiary's bribery decision (Zhou and Peng, 2012). Following previous studies (e.g., Thornhill, 2006; Jiménez-Jiménez and Sanz-Valle, 2011), the author controls for firm-specific characteristics, including the MNE subsidiary's size, age and technology. Financial constraint is included as another control variable as it is an obstacle to firm performance (Smolarski and Kut, 2011; Gorodnichenko and Schnitzer et al., 2013). The author also controls for informal competition (Henderson and Mitchell, 1997) and export intensity (Katsikeas, Leonidou and Morgan, 2000; Zou and Cavusgil, 2002 et al.). Furthermore, following previous research (e.g., Elango and Sethi, 2007; Qian et al., 2010) the host-country GDP and GDP growth rates are included to control for the macroeconomic

variations.  $\eta_j$  and  $\mu_t$  refer to industry, year fixed effect, respectively.

MNE subsidiary performance can be financially measured by various indicators, such as sales per employee, value added per employee, net profit per employee (Girma, Görg, and Strobl, 2004), employment and investment (Birhanu, Gambardella and Valentini, 2015), return on assets, and return on equity (Peng and Luo, 2000). Given the heterogeneous and sometimes unobserved incentives and profit hiding behaviour, an indicator like sales revenue would produce more reliable estimation results. As larger firms may be more visible to government corruption (Fisman and Svensson, 2007), the author takes into account the size effect by using the number of employees to normalize the firm's sales income. Thus the dependent variable, firm performance, is measured by the fiscal year's sales per employee, following Wang and You (2012). To control for the host country corruption status and its interaction with the MNE subsidiary's bribery decision, the MNE subsidiary's perceived government corruption is incorporated in the estimation equation. Perceived pressures of home country government corruption is captured by the World Bank enterprise survey question, which asked managers to report their perceptions concerning the extent to which corruption pressures posed an obstacle to their firms' operation building on previous studies (Spencer and Gomez, 2011). This question was worded in a manner that it was less sensitive to interviewees. They were not asked to disclose whether or not they had been involved in corrupt activities, but the extent to which they perceived the host country's institutionalized corruption as an obstacle to their business operation and performance. As these questions did not indicate that the MNE subsidiaries do or do not engage in bribery, managers should be less concerned about indirectly revealing sensitive information.

The author employs OLS regression as the benchmark to estimate Eq. (9) and conduct instrumental variable (IV) estimation to tackle the potential endogeneity issue of fitted extent of bribery. Although the author tried to mitigate the "self-select to bribe" bias, endogeneity issue coming from potential measurement error or bribery, reverse causality because of pursuing desired performance, and potential missing variables may still bias the



estimates. Following Birhanu, Gambardella and Valentini (2015), the industry-country-year average fitted extent of bribery is utilized to instrument the fitted extent of bribery for each firm.

#### **5.4 The Benchmark Results about the Interactive Role of Resource-based and Institutional Moderators in the Bribery-performance Nexus**

In this sub-section, the author tests the hypothesis that MNE subsidiary resources moderate the bribery-performance nexus controlling for corruption pressures MNE subsidiaries face. After correcting MNE subsidiaries' self-selection bias to bribe, the author estimates the regression model set by Eq. (9) using the fitted extent of bribery. Table 18 presents the benchmark results based on OLS regression.

The author first specifies Column (1) of Table 18 that includes only control variables. The author then adds the independent and moderating variables to form Column (2) to Column (5). The results in Column (1) show that firm size and technology licensed from a foreign-owned company both positively contribute to an MNE subsidiary's performance. Although the logarithm of host country GDP negatively contributes to the MNE subsidiary's performance, the effect is not consistently significant when considering the endogeneity issue in Table 19. From Column (2), bribery is shown to have a statistically negative effect on MNE subsidiary performance when the other explanatory variables are controlled for. It is obvious that bribery is direct financial costs and it wastes employees' time that could have been spent on productive activities such as production and sales. As a result, bribery generates a direct negative impact on MNE subsidiary performance. However, in countries where corruption is prevalent, bribery can actually produce positive effects on MNE subsidiary performance, and this is verified by the interaction term of bribery and an MNE subsidiary's perceived corruption pressure in Column (2). Moreover, IQC also implies better performance. The host country corruption pressure variable itself is positively associated with MNE subsidiary performance. Possible reasons could be that corruption assists MNE

subsidiaries in overcoming bureaucratic constraints (Huntington, 1968) and that there is inefficient public service especially when operating in counties with weak institutions (Acemoglu and Verdier, 2000; De Vaal and Ebben, 2011).

Columns (3) - (5) show how an MNE subsidiary's resources affect the bribery-performance nexus after controlling for the MNE subsidiary's perceived pressures of corruption. Following (Aiken and West, 1991), the author enters all the two-way interactions along with three-way interactions to identify the true three-way interactive effects. The three-way interactions in Columns (3) and (4) indicate that bribery's positive effect would be cut down if the MNE subsidiary has a higher home country anti-corruption index or an IQC. This confirms hypotheses 2 and 3. In other words, *ceteris paribus*, for MNE subsidiaries with IQC and from well-developed institutions, the less bribery, the better performance. But in Column (5), the three-way interaction term is not significant, indicating that hypothesis 4 is not supported. This may be due to the complexity of the role of the MNE subsidiary manager's experience, and a further investigation is needed.

Table 18: OLS regression results for the integration of resource-based factors and institutional factors' effects on the bribery- performance nexus

	(1)	(2)	(3)	(4)	(5)
Dependent variable: Log (sales per employee)	Effects of control variables	Host country institution effects	Home country anti-corruption effects	IQC effects	Managers' experience effects
Firm size	0.199*** (3.76)	0.200*** (3.25)	0.220*** (3.56)	0.186*** (2.99)	0.215*** (3.49)
Technology licensed from a foreign-owned company	0.536** (2.19)	0.679** (2.47)	0.728*** (2.76)	0.701*** (2.62)	0.725*** (2.72)
Financing obstacle	-0.074** (-2.00)	-0.042 (-1.02)	-0.044 (-1.05)	-0.043 (-1.04)	-0.041 (-0.95)
Informal competition	-0.055 (-1.45)	-0.037 (-0.90)	-0.034 (-0.81)	-0.066 (-1.62)	-0.037 (-0.89)
Export intensity	-0.455 (-1.59)	-0.908** (-2.23)	-1.371*** (-3.37)	-1.198*** (-3.07)	-1.234*** (-2.95)
Log(Firm age)	0.001 (0.13)	-0.006 (-1.04)	-0.003 (-0.62)	-0.006 (-1.09)	-0.004 (-0.80)
Log(Host country GDP)	-	-0.218***	-0.156**	-0.228***	-0.165**

		0.342***			
		(-5.60)	(-2.78)	(-2.11)	(-2.98)
Host country GDP growth rate	-0.007	-0.041	-0.275	-0.438*	-0.376
	(-0.30)	(-1.10)	(-1.07)	(-1.76)	(-1.49)
Fitted extent of bribery (FB)		-0.642***	-1.040***	-0.805***	-1.081***
		(-3.16)	(-5.85)	(-4.71)	(-4.35)
Perceived host country corruption pressure (Host country GC)		0.046	0.783***	0.158***	0.183**
		(0.93)	(4.70)	(3.10)	(2.45)
Host country GC × FB		0.113***	0.514***	0.142***	0.233***
		(2.66)	(4.36)	(3.18)	(2.97)
Internationally-recognized quality certificate (IQC)		0.428***	0.620***	1.039***	0.545***
		(2.60)	(3.73)	(2.85)	(3.24)
Manager's experience		0.004	0.004	0.002	0.026**
		(0.58)	(0.68)	(0.30)	(2.08)
Home country anti-corruption index (HAP)			0.623***	0.202*	0.162
			(4.10)	(1.86)	(1.46)
HAP × FB			-0.008		
			(-0.71)		
Host country GC × HAP			-0.195***		
			(-4.39)		
Host country GC × FB × HAP			-0.071***		
			(-2.63)		
FB × IQC				-0.006	
				(-0.19)	
Host country GC × IQC				-0.090	
				(-0.61)	
Host country GC × FB × IQC				-0.214**	
				(-2.01)	
FB × log (Manager's experience)					0.017
					(1.51)
Host country GC × Manager's experience					-0.006
					(-1.65)
Host country GC × FB × Manager's experience					-0.003
					(-0.84)
Year-fixed effect	Yes	Yes	Yes	Yes	Yes
Industry-fixed effect	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.23	0.25	0.20	0.23	0.18
Observations	1885	1674	1652	1652	1652

Note: Robust t-statistics are reported in the parentheses. \*\*\*, \*\* and \* indicate significant at 1%, 5% and 10% significance level, respectively. The parallel analysis of the variance inflation factor (VIF) statistics after OLS regression indicate that VIFs are well below the recommended threshold of 10, suggesting multicollinearity is not a serious issue for this model (Neter, Wasserman, and Kutner, 1985).

## **5.5 IV Regression to Assess the Interactive Role of Resource-based and Institutional Moderators in the Bribery-performance Nexus**

To tackle the potential endogeneity issue of firm bribery, the author adopts an instrumental variable (IV) approach to re-estimate Eq. (9) and the results are reported in Table 18. Following Birhanu, Gambardella and Valentini (2015), the author uses the country-industry-year average fitted extent of bribery and its interactions with other related variables (i.e., host country perceived government pressure, home country anti-corruption index, holding of IQC and manager's experience) as the excluded instrumental variables. The results are shown in Table 19.

It is confirmed that the estimation results in Table 19 are still robust even after tackling the potential endogeneity issue. Firm size and technology license from a foreign-owned company still statistically and positively contribute to firm performance. The direct impact of bribery on firm performance is negative, while it may have some positive influence on firm performance when facing relatively high corruption pressures. The impacts of host country GDP and its growth rate on firm performance are not robust, indicating that country-level macroeconomic development can't directly determine firms' specific performance.

The results in Columns (2) to (4) in Table 19 generated by the IV approach are qualitatively the same as those in Table 5. The three-way interaction terms in Columns (2) and (3) are significant, while is insignificant in column (4). Overall, hypotheses 2 and 3 are again supported based on the IV regression results<sup>37</sup>. The four Kleibergen-Paap rank LM  $\chi^2$  statistics reject the under identification null hypotheses and the Kleibergen-Paap rank Wald F statistics indicate that instrumental variables used here are not weak.

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<sup>37</sup> Except for Hypothesis 4.

Table 19: IV regression results for the integration of resource-based factors and institutional factors' effects on the bribery- performance nexus

Dependent variable: Log(sales per employee)	(1) Host country institution effects	(2) Home country institution effects	(3) International certificate effects	(4) Manager's experience effects
Firm size	0.188*** (3.10)	0.193*** (3.07)	0.206*** (3.34)	0.206*** (3.35)
Technology licensed from a foreign- owned company	0.843*** (2.98)	0.873*** (3.21)	0.766*** (2.88)	0.790*** (2.96)
Financing obstacle	-0.028 (-0.69)	-0.032 (-0.74)	-0.028 (-0.67)	-0.034 (-0.80)
Informal competition	-0.030 (-0.75)	-0.037 (-0.86)	-0.041 (-0.98)	-0.036 (-0.86)
Export intensity	-1.006** (-2.47)	-1.496*** (-3.65)	-1.325*** (-3.30)	-1.295*** (-3.10)
Log(firm age)	-0.010* (-1.71)	-0.006 (-1.03)	-0.007 (-1.30)	-0.006 (-1.15)
Log(Host country GDP)	-0.144* (-1.74)	-0.069 (-0.90)	-0.128* (-1.70)	-0.123 (-1.63)
Host country GDP growth rate	-0.012 (-0.33)	0.044 (0.16)	-0.283 (-1.13)	-0.268 (-1.05)
Fitted extent of bribery (FB)	-1.007*** (-3.96)	-1.351*** (-5.01)	-1.055*** (-5.69)	-1.288*** (-4.65)
Perceived host country corruption pressure (Host country GC)	0.100* (1.91)	0.945*** (5.40)	0.163*** (3.16)	0.212*** (2.80)
Host country GC × FB	0.152*** (3.38)	0.740*** (4.95)	0.216*** (4.25)	0.278*** (3.21)
Internationally-recognized quality certificate (IQC)	0.409** (2.50)	0.622*** (3.73)	1.047*** (2.91)	0.535*** (3.20)
Manager's experience	0.007 (1.04)	0.007 (0.99)	0.007 (1.02)	0.026** (2.11)
Home country anti-corruption (HAP)		0.703*** (4.48)	0.187* (1.71)	0.186* (1.68)
HAP×FB		-0.076 (-1.55)		
Host country GC × HAP		-0.218*** (-4.76)		
Host country GC × FB × HAP		-0.104*** (-2.80)		
FB × IQC			-0.003 (-0.09)	
Host country GC × IQC			-0.065 (-0.44)	
Host country GC × FB × IQC			-0.227**	

						(-2.17)	
FB × Manager's experience							0.017 (1.42)
Host country GC × Manager's experience							-0.006 (-1.57)
Host country GC × FB × Manager's experience							-0.004 (-1.01)
Kleibergen-Paap rank LM $\chi^2$ statistic				252.5	523.2	241.1	257.0
Kleibergen-Paap rank Wald F statistic				1744.4	1435.0	1003.2	1074.8
Year-fixed effect				Yes	Yes	Yes	Yes
Industry-fixed effect				Yes	Yes	Yes	Yes
R-squared				0.24	0.18	0.19	0.18
Observations				1674	1652	1652	1652

Note: Robust t-statistics are reported in the parentheses. \*\*\*, \*\* and \* indicate significant at 1%, 5% and 10% significance level, respectively.

In line with Hitt, Bierman, Shimizu and Kochhar (2001) and Martin, Cullen, Johnson and Parboteeah (2007), the author draws conventional graphs for marginal effects to interpret the findings, and such moderation effects of home country anti-corruption and IQC are shown in Figures 11 and 12 respectively. As shown, the highest level of MNE subsidiary performance with a high fitted extent of bribery is achieved when the host country government corruption pressure an MNE subsidiary faces is high but the home country anti-corruption index is low (or the MNE subsidiary does not have an IQC). By contrast, the highest level of MNE subsidiary performance with a low fitted extent of bribery is achieved when the host country government corruption pressure an MNE subsidiary faces is low but the home country anti-corruption index is high (or the MNE subsidiary owns IQCs).

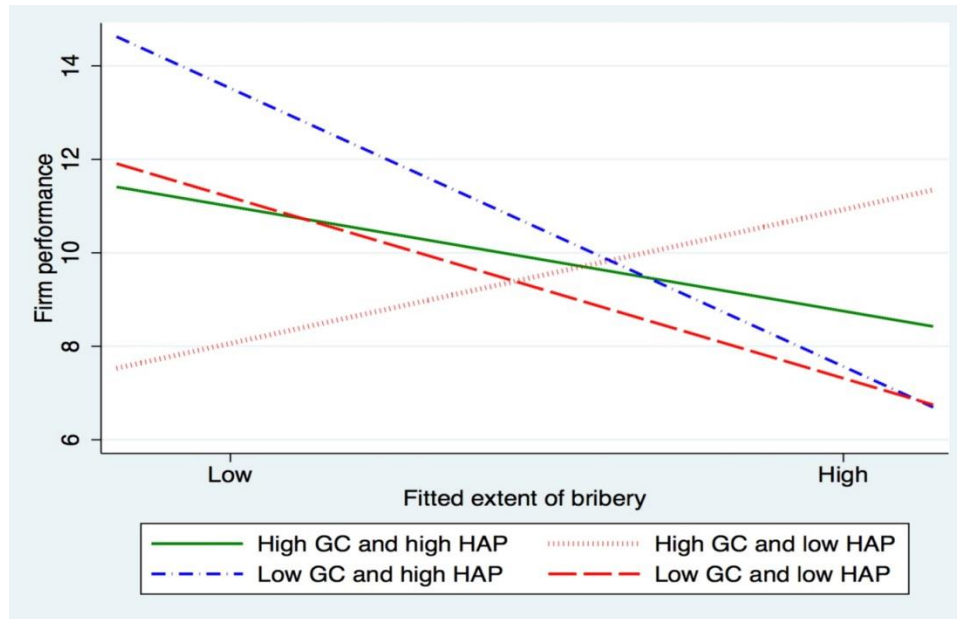


Figure 11: Interaction of perceived host country corruption, home country anti-corruption and bribery

Note: GC refers to host country government corruption; HAP refers to home country anti-corruption practice index. Low level is minus one standard deviation from the mean, and high level is plus one standard deviation from the mean.

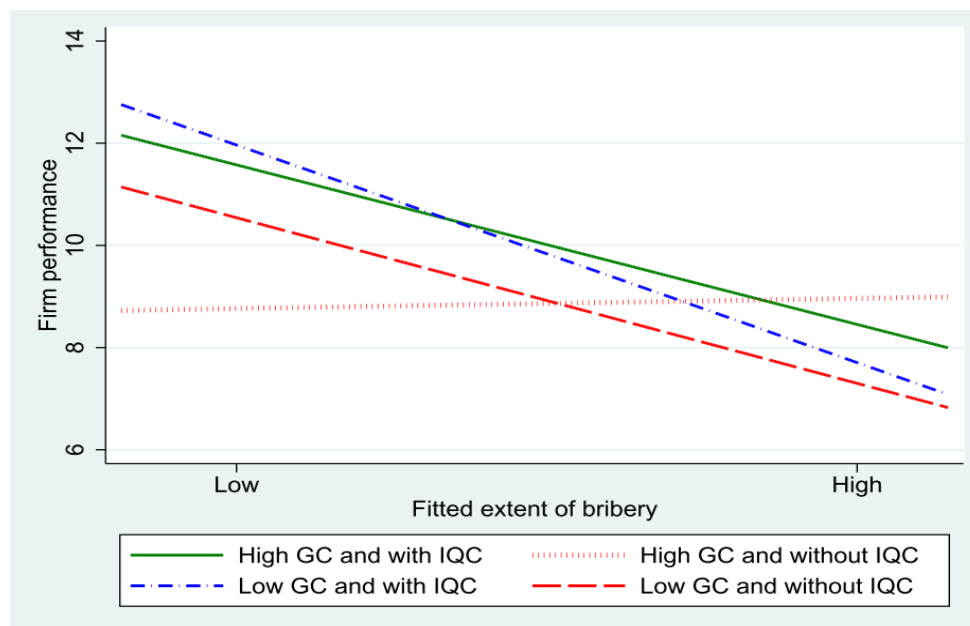


Figure 12: Interaction of perceived host country corruption, MNE subsidiaries holding of IQC and bribery

Note: GC means host country government corruption, IQC refers to MNE subsidiaries' holding of internationally-recognized quality certification. Low level is minus one standard deviation from the mean, and high level is plus one standard deviation from the mean.

## 5.6 Robustness Checks

For the moderating effect, the author has conducted the following robustness checks. Firstly, the author replaces the measure of the home country anti-corruption index with the home country's transparency index (as an anti-corruption measure) taken from the Transparency International<sup>38</sup>. The anti-corruption index of the home country plays a role in shaping an MNE subsidiary's corruption behavior, which is very close to the impact of corruption in the home country. The results show that home-country embeddedness can still negatively affect the bribery-performance nexus after controlling for the host country corruption pressures MNE subsidiaries face. The results are reported in Column (1) of Table 20.

Secondly, only the manufacturing firms are kept to check the moderating role of an MNE subsidiary's IQC. As quality certificates, ISO 9000, 9002 and 14000 etc., are standards that ensure firms' materials, products, process and services are fit for their purposes<sup>39</sup>, and services firms are less likely to get an IQC. This is also confirmed by the data, i.e., manufacturing firms have 28% higher probability to own a quality certificate than services firms. Therefore, to alleviate the potential attenuation bias, the author keeps only the manufacturing firms to re-estimate the moderating effect of quality certificate. The results in Column (2) of Table 20 show that IQC can play a role in anti-corruption, and an MNE subsidiary with a quality certificate would have worse performance caused by bribery after controlling for the perceived pressure of corruption. This also confirms the robustness of the results.

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<sup>38</sup> Please refer to this website for more detail: <https://www.transparency.org/research/cpi/overview>.

<sup>39</sup> A similar description can be found on the website of the International Standard Organization: <http://www.iso.org/iso/home/standards.htm>.



Table 20: Robustness check-IV Estimates

Dependent variable: Firm performance	Changing home- embedded institution measure	Keeping only the manufacturing industry
Firm size	0.181*** (2.87)	0.165** (2.45)
Technology licensed from a foreign-owned company	0.761*** (2.79)	0.831*** (2.89)
Financing obstacle	-0.032 (-0.74)	-0.055 (-1.04)
Informal competition	-0.061 (-1.43)	-0.145*** (-2.80)
Export intensity	-1.484*** (-3.56)	-1.026** (-2.38)
Log(firm age)	-0.003 (-0.62)	-0.010* (-1.80)
Log(Host country GDP)	-0.184** (-2.30)	-0.144 (-1.39)
Host country GDP growth rate	-0.076 (-0.29)	-0.460 (-1.24)
Fitted extent of bribery (FB)	-0.840*** (-3.41)	-1.151*** (-4.07)
Perceived host country corruption pressure (Host country GC)	0.580*** (3.17)	0.215*** (3.21)
Internationally-recognized quality certificate (IQC)	0.581*** (3.46)	1.251** (2.53)
Home country GC $\times$ FB	0.643*** (4.15)	0.271*** (4.18)
Manager's experience	0.003 (0.48)	0.006 (0.85)
Home country anti-corruption (HAP)		0.226 (1.36)
Home country corruption perceptions index (CPI)	0.350** (2.05)	
Home country CPI $\times$ FB	-0.105** (-2.24)	
Host country GC $\times$ Home country CPI	-0.140*** (-2.63)	
Host country GC $\times$ FB $\times$ Home country CPI	-0.115*** (-2.63)	
FB $\times$ IQC		-0.010 (-0.21)
Host country GC $\times$ IQC		-0.233 (-1.53)

Host country GC $\times$ FB $\times$ IQC		— -0.118* (-1.82)
Kleibergen-Paap rank LM $\chi^2$ statistic	530.8	147.3
Kleibergen-Paap rank Wald F statistic	1399.0	445.8
Year-fixed effect	Yes	Yes
Industry-fixed effect	Yes	Yes
Pseudo R-squared	0.16	0.29
Observations	1649	825

Note: Robust t-statistics in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Column (1) reports the estimation results based on replacing the home country law-and-order index by the Transparency International's country-level corruption index. Column (2) reports the results, which depend on the sample that keep only the manufacturing sector as robustness checks for certificate effects.

## 5.7 Discussion and Conclusion

Through the integration of IT and the RBV, the author contributes to the theoretical literature by developing an analytical framework based on the interactive role of institutions and firm resources, to explain the heterogeneous role of MNE subsidiaries' bribing strategy on their performance (Peng et al, 2009; Oliver, 1997; Brouthers, Brouthers, and Werner, 2008). Following this framework, the author identifies and documents the impacts of MNE subsidiaries' bribery in corrupt environments. The overarching argument is that MNE subsidiaries' perceived institutional pressures and specific resources interact with each other, jointly moderating the effectiveness of bribery on performance.

The findings are theoretically meaningful as it assists us in explaining the heterogeneity of the impact of bribery on MNE subsidiary performance in a comprehensive way, with careful consideration of both resource-based and institutional factors (Spencer and Gomez, 2011; Birhanu et al., 2015; Martin, et al., 2007; Svensson, 2003; Jeong and Weiner, 2012). The identification of the interactive mechanisms between bribery, pressures of corruption, resources and MNE subsidiary performance also helps managers to understand how their firm-specific advantages for addressing corruption in a corrupt environment originate from, or are reinforced, and how they can make use of their resources and home and host

institutional factors to properly deal with bribery requests and achieve sustainable success.

First, based on the OLS and IV regressions, the empirical results confirm the author's arguments about the interactive role of institutional and resource-based constructs in predicting the impact of bribery on performance. The interaction of bribery, perceived corruption, and home country anti-corruption significantly generates negative effect on MNE subsidiary performance. This indicates that for MNE subsidiaries from a home country with high anti-corruption practices, bribery produces negative effect on performance, controlling for the level of perceived corruption. But for MNE subsidiaries from a home country with low anti-corruption practice, bribery generates positive effect on performance. For MNE subsidiaries from a home country with high anti-corruption practices, bribery contributes less to firm performance, controlling for the level of perceived corruption. This confirms that MNE subsidiaries from different home countries have different institution-based resources. On one hand, this is consistent with Cuervo-Cazurra's (2006) work that MNE subsidiaries from corrupt home institutions are more advantageous in similar institution conditions, as they can exploit bribery better and gain extra profits (Sencer and Gomez, 2011). On the other hand, MNE subsidiaries from home countries with developed institutions are in a better position than those from home countries with poor institutions to refuse bribery and achieve good firm performance due to their possession of strong internal resources. This is an ethical and sustainable way to be successful.

Second, IQC's role as a firm resource and anti-corruption institution is confirmed (Clougherty and Grajek, 2008; Terlaak, 2007; World Bank, 2014). Controlling for the perceived pressures of corruption, MNE subsidiaries' holding of IQC leads to a negative bribery-performance nexus. This shows that for MNE subsidiaries that hold strong resources, a better way to achieve sustainable and good performance is to pay no bribes. This is in line with (Luiz and Stewart, 2013) who suggest that MNE subsidiaries do not need to get caught in a vicious cycle whereby they perpetuate corruption in conditions of underdeveloped institutions but instead can contribute towards a virtuous cycle through

developing resources and ongoing refusal for bribery.

But the top manager's role in interacting with institutional conditions and moderating the impact of bribery is not all significant. One reason for this insignificant result may be that the data about managers' experiences do not distinguish managers' characteristics such as country-of-origin. Insufficient information about managers may result in the insignificant estimation result. For future research, detailed information about top managers should be collected and analyzed, such as their country of origin, degree of ties with governments, and family relations with government officials (Collins and Uhlenbruck, 2004), as these variables are much stronger predictors of whether a firm engages in and exploits corruption, to check the role of managers' experience, as a firm resource, in moderating the bribery-performance nexus (Collins and Uhlenbruck, 2004).

## **Chapter 6: Conclusions**

### **6.1 Introduction**

This chapter summarizes the main research findings, discusses their theoretical and managerial implications, acknowledges the research limitations and provides recommendations for future research.

### **6.2 Summary of Main Research Findings**

Follow Yan and Grey (1994), chapter 2 of the thesis synthesizes past research results on the RBV and IT, and identifies their limitations, boundaries, overlaps, and integration mechanism in an international business context. Even through the assumptions of the RBV and IT are different, or contradictory by traditional views, the author argues that they two overlap as they can both be employed in an international business context to explain the heterogeneity of MNEs, and they can be integrated as: (a): MNEs select, accumulate and formulate firm-specific resources in a certain institutional environment, and in IB, variations of MNEs' embedded institutional environments contribute to the heterogeneity of their specific resources; (b): Incorporating both institutions' indirect enabling role and direct supplying role in MNEs' formulation of resources, institution-based resources assist dramatically in explaining MNEs', especially EMEs' distinct internationalization trajectories; (c): The value and applicability of MNEs' resources vary upon institutions. Institutional factors moderate the effect of resources on MNEs' internationalization strategy and performance; (d): MNEs' specific resources moderate the effect of institutions on their internationalization strategy and performance. Based on the possible integration of the RBV and IT, the author further discusses the application of the integration on MNE study, and proposes that a): MNEs accumulate institution-based resources from home country institutions' enabling role and supplying role in firm resource development. MNEs' holding of institution-based resources affect their OFDI strategy and performance; (b): Institutional

and resource-based factors have their separate effects on MNEs' OFDI strategy and performance, but they then jointly determine MNEs' OFDI strategy and interactively moderate the effectiveness of MNEs' OFDI strategy on performance.

Chapter 3 aims to examine the impact of EMEs' state ownership status, absorptive capacity and entry strategy on EMEs' productivity gain from OFDI. The propensity-score matching and difference-in-difference (DID) approaches are combined to test the framework. Utilizing unique data on Chinese manufacturing firms over the sample period 2002–2008, the author finds that 1) An EME without state ownership gains more positive productivity effect via OFDI than that with state ownership; 2) The stronger the EME's absorptive capacity, the more positive productivity premium it can get from OFDI; 3) In contrast with greenfield investment, the positive productivity effect an EME acquires via M&A is lagged; 4) An EME investing in developed countries only gains more from OFDI-led productivity enhancement.

Chapters 4 and 5 aim to identify the determinants and impact of MNE subsidiaries' choice of bribing strategy in corrupt environments. The analytical framework is built based on an integration of resource-based and institutional constructs, and tested using firm-level data from 2210 MNE subsidiaries operating in Africa. Controlling for MNE subsidiaries' self-selection to bribe, the findings, based on the Tobit, OLS and IV regression results, indicate that the heterogeneity of MNE subsidiary resources and perceived corrupt pressures lead to differing bribery strategies in response to host country corruption, and these two variables then interactively moderate the impact of bribery on MNE subsidiary performance. The author finds that MNE subsidiaries' perceived level of host country corruption produces a positive effect on their choice of bribery. But MNE subsidiaries' home-country anti-corruption levels and their holding of internationally recognized quality certification (IQC) reduce MNE subsidiaries' willingness to pay bribes. A more interesting finding is that, after

controlling for MNE subsidiaries' perceived pressures of corruption in host countries, MNE subsidiaries' home-country anti-corruption levels and MNE subsidiaries' holding of IQC negatively moderate bribery's effectiveness on performance.

### **6.3 Theoretical Contributions and Implications**

Separate applications of the RBV and IT have been criticized by a number of scholars, e.g., Kostova and Roth (2008) and Peng (2008; 2009). At the same time, although the integration of the RBV and IT has been called for (Hoskisson et al., 2012), and some attempts have been made to integrate them, it is still not clear what their boundaries and overlaps are in MNE research, and how we can integrate them (Oliver, 1997; Brouthers, et al., 2008; Wang, et al., 2012; Martin, 2014; Dunning and Lundan, 2008). Rather than merely asking “Whether is either the RBV or IT enough to explain MNEs, especially EMEs’ OFDI?”, or “Shall we integrate the RBV and IT?”, this thesis firstly contributes to the literature by discerning “why” we integrate the RBV and IT, and “how” we can integrate them. Based on the analysis of the integration of the RBV and IT, the author then develops a new model to explain MNEs, especially EMEs’ OFDI strategy and performance. The author does not disagree with the separate explaining power of the RBV and IT in an international business context (Dean and Meyer, 2012; Brouthers et al., 2008; Chen et al., 2009; Cuervo-Alvero, 2008; Meyer, 2001; Meyer et al., 2009), but goes further by arguing that resource-based and institutional constructs are complementary and interdependent in international business research, and a model that recognizes not only the separate role of resource-based and institutional factors, but also their integrative roles could explain/predict MNEs’ OFDI activities better. Brouthers, et al. (2008) have emphasized that we should add institutions’ role into the resource-MNE performance nexus, as resources’ role could be moderated by institutional differences across borders. But we further contribute by recognizing that institutions’ role in MNE activities could also be moderated by resources. These arguments are in line with Svensson (2003), and Marano and Kostova (2016). Besides, via recognizing

institutions' indirect enabling role and direct supplying role in MNEs' accumulation of resources, the author has developed the new concept "institution-based resources". Institutions' enabling role in firms' formulation of resources has recently identified by Martin (2014) and Cuervo-Alvero (2008), but the author further contributes by discussing institutions' supplying role of resource development for MNEs, specifically for EMEs. As EMEs have gone abroad far before they accumulate enough resources, and invest in a distinctive way, recognizing the institution-based resources helps significantly explain "why" EMEs' go global in those ways and "how" they compete in global markets (Buckley, et al., 2007).

Given the mixed empirical results of the impact of EMEs' OFDI on their productivity change (De La Potterie and Lichtenberg 2001, Bitzer and Kerekes 2008, Driffield and Chiang 2009, Herzer 2011, Masso and Vahter 2008, Hijzen, Inui, and Todo 2007, Barba Navaretti and Castellani 2004), chapter 3 takes into consideration the role of EME heterogeneity in resource and institutional conditions and entry strategy, and provide insights into how resource and institutional conditions affect EMEs' productivity gain from OFDI. After careful control for firms' self-selection bias and simultaneous bias, chapter 3 firstly confirms that generally, there is a positive effect of EMEs' OFDI on productivity growth. This lends support to the learning-by-OFDI argument (Cohen and Leventhal, 1990; Cantwell, 1992; Dawar and Frost, 1999; Frost et al., 2002; Zahra and George, 2002). But apart from that, the author finds that the OFDI productivity effect varies according to EMEs' holding of resources and their institutional conditions. Private EMEs gain positive productivity effect via OFDI while SO-EMEs don't. As Wang et al., (2012) suggest, SOEs can be more resource-abundant because they are closer to government and thus resources. But the author then argues that the empirical results indicate that SO- EMEs are unable to benefit from learning-by-OFDI, as their heavy resource-dependence on home countries pushes them to serve more for national goals, but not economic goals (Cui and Jiang, 2012). EMEs' absorptive capacity helps substantially in EMEs' productivity upgrade. EMEs'



absorptive capacity works as EMEs' key tangible resources, shape EMEs' ability of recognizing, assimilating, applying and recreating of external valuable knowledge and information (Barney, 2001; Deng, 2007). It also helps EMEs to compete in developed markets. In line with both the RBV and IT, the results also confirm that EMEs that invest in developed countries generate more productivity premium as institutions there include agglomerated high-tech resources and well developed infrastructures (Hoskisson et al., 2013). Furthermore, different from the existing literature which asserts that M&A serves better in asset-augmenting (Chung and Alcacer, 2002), estimation results in this chapter suggest that OFDI's productivity effects on EMEs will be lagged because of the firm-level and country-level institutional conflicts. Compared with entry by greenfield, M&A asks for more to deal with corporate culture and value integration, and produces more historical burdens for merged affiliates (Görg, 2000).

Chapters 4 and 5 contribute to theoretical literature by testing the analytical framework based on integration of resource-based factors and institutional factors, to explain the heterogeneity of MNEs' OFDI strategy and financial performance (Peng et al., 2009; Oliver, 1997; Brouthers et al., 2008). The author has examined the determinants and impact of MNE subsidiaries' bribing strategy in corrupt host countries, and the testing results support the author's overarching theoretical arguments by indicating that MNE subsidiaries' bribing strategy is not only determined by institutional factors, e.g., home and host country corrupt institutional pressures, but also MNE subsidiaries' resources, e.g., holding of IQC. More importantly, MNE subsidiaries' confronted institutional pressures integrate with MNE subsidiaries' resources, moderating the results of MNE subsidiaries' bribery on their performance.

Thus, empirical works in chapters 4 and 5 firstly fill in the research gaps (Peng et al., 2008 and 2009; Oliver, 1997; Brouthers et al., 2008; Martin, 2014; Wang et al., 2012; Dunning and Lundan, 2008) and generate theoretical implications by confirming the propositions in

chapter 2 that the RBV and IT jointly determine MNEs' strategy and moderate its effectiveness on performance.

Secondly, this work looks beyond institutional theory (Spencer and Gomez, 2011; Martin et al., 2007; Svensson, 2003) in understanding MNE subsidiaries' choice of bribery, and declaring that not only MNE subsidiaries' confronted home and host country corrupt pressures, but also MNE subsidiaries' holding of IQCs can affect MNE subsidiaries' bribing strategy. As perceived host country pressures of government corruption force MNE subsidiaries' to pay bribes, MNE subsidiaries' home country anti-corruption practice and MNE subsidiaries' holding of IQCs stimulate them to refuse bribery.

Thirdly, the three-way interactions of MNE subsidiaries' institutional conditions, resources, and strategies on performance generate more valuable theoretical implications. Identifying MNE subsidiaries' home-of-origin as their institution-based resource, the author finds that the interaction of MNE subsidiaries' perceived host country corrupt pressures, MNE subsidiaries' home country anti-corruption practice and MNE subsidiaries' bribery generate negative effect on MNE subsidiaries' financial performance. This indicates that, controlling for the level of MNE subsidiaries' perceived institutional pressures of corruption in host countries, MNE subsidiaries' bribery produces negative effect on the performance for MNE subsidiaries' from home countries with high anti-corruption, but generates positive effect for MNE subsidiaries from countries with less anti-corruption practice. On one hand, these empirical results support the theoretical argument by Cuervo-Alovero (2008) who argues for MNEs' comparative advantages in host countries with a similar institutional environment to their home countries. But on the other hand, the author highlights that, MNE subsidiaries' home-of-origin, serving as MNE subsidiaries' embedded resources, helping them to gain sustainable profits without engaging in bribery. Similarly, interaction of MNE subsidiaries' perceived host country corrupt pressures, MNE subsidiaries' holding of IQCs and MNE subsidiaries' bribery also generate a negative effect on MNE subsidiaries' financial

performance. This suggests that controlling for MNE subsidiaries' perceived corrupt pressures, their holding IQCs leads to a negative bribery-performance relationship. This result confirms IQCs' role as MNE subsidiaries' tangible resources, and a signal for anti-corruption (Clougherty and Grajek, 2008; Terlaak, 2007; World Bank, 2014). Following this, for an MNE subsidiary that holds IQC or other kinds of resources, a better way for them to achieve sustainable and good performance in corrupt contexts is to refuse bribery requests (Luiz and Stewart, 2013).

Fourthly, as bribing action is unethical but pervasive in Sub-Sahara African countries, empirical findings in chapters 4 and 5 about how MNEs react to bribery requests also contribute significantly to existing literature on MNEs' corporate social responsibility (CSR) in host countries. MNEs are now expected to account for all aspects of their performance, not just their financial results, but also social performances, i.e., their CSR (Luo, 2006). They are suggested to be obligatory to and powerful enough to resist corruption in host countries (Luiz and Stewart, 2013). But as they operate in diverse institutional environments where their relationships with host governments and stake holders are critical and complex, it is difficult for them to do that if they do not actively participate in fighting it (Luo, 2006). What's more important, as previous literature has attempted a lot to identify the relation between MNEs' corporate social responsibility and financial performance by asking the question that 'do firms do well by doing good?', the reported results have ranged from showing a negative relation, to showing no relation, to showing a positive relation (Rodriguez, Siegel, Hillman and Eden, 2006). Existing literature, eg., Luo (2006) and Rodriguez, Siegel, Hillman and Eden (2006) suggest that the integration of the research from institutions, corruption and CSR lenses expand our understanding of how and when anticorruption MNEs succeed. This work thus confirms their arguments and contributes to the literature of MNEs' CSR by arguing that MNE subsidiaries that operate in high corrupt contexts do benefit from strong corporate social responsibility. They achieve sustainable financial performance via refusing bribery request. In addition, estimation results in chapters

4 and 5 on IQC's role suggest that IQC works as informal institution and ethical codes to force MNEs to carefully consider ethical issues (Luo, 2006). At the same time, with the function of IQC, MNE subsidiaries turn out to obtain positive relation between corporate social responsibility and financial performance.

#### **6.4 Managerial Implications**

This thesis has significant managerial and policy implications for MNEs and governments. In general, it reminds MNEs to look beyond the separate roles of resource-based factors and institutional conditions when formulating OFDI strategies. Instead, MNEs need to consider resource-based factors and institutional conditions in a more comprehensive way. As resource-based factors and institutional conditions are integrative and complementary, a strategy that captures both factors can be utilized by MNEs to generate superior and more sustainable performance.

Specifically, chapter 3 indicates that productivity premiums EMEs can get from OFDI do exist, but they are definitely not automatic, and they differ according to EMEs' heterogeneity in their resources, institutional conditions, and choices of OFDI strategies. OFDI in technology-intensive clusters in developed institutions provide EMEs with more possibilities to absorb high-tech and upgrade productivity. Thus an EME that invests for asset augmenting should consider more to choose developed clusters as destinations. However, a prerequisite for real resource augmentation is that EMEs themselves have enough absorptive capabilities. EMEs' pre-OFDI R&D, as intangible resources, helps gain productivity growth from OFDI, and at the same time, EMEs' capabilities in post-M&A management also determine whether and when they can benefit after OFDI. With less international experiences and tangible resources, EMEs are more vulnerable for foreign liabilities and cross cultural differences, and are more difficult to succeed. Therefore the author emphasizes that EMEs carefully evaluate their strategic OFDI purposes and their existing pre-OFDI resources and capabilities, especially capabilities in post-M&A management, which will

highly determine whether their OFDI is going to be profitable, or wasteful.

In contrast with private EMEs, SO-EMEs can access abundant institution-based resources, but they actually do not benefit from OFDI in productivity upgrading. As the author has argued in chapter 2, EMEs are offered with institution-based recourses and thus invest distinctively from traditional MNEs. But the results in chapter 3 indicate that institution-based resources can act as a double-edged sword. On one hand, institution-based resources support EMEs to go abroad to seek for potential markets, strategic assets, or natural resources, but on the other hand, they impose many restrictions and pressures on them. The higher resource-dependence of EMEs on institutions, the more they are tightly guided, political-goals oriented and insensitive to market competition. This dissatisfying result alerts emerging economies a lot. Too much government intervention can be counter-productive. Home country support, especially direct financial support could be a driver or a good promotion for EMEs' first step to global investment and competition, but it cannot and should not be the enduring guarantee to unlimitedly buy in their loss and keep their sustainable success. It might be more wise for emerging market governments to unfasten the political shackles for SO-EMEs, and instead, stimulate and help all EMEs to build up competitive capabilities and absorptive capability via institutional infrastructure development, R&D centers construction, human capital cultivation, market and network information supplements, professional consultancy services, transparent and easier financing processes. These not only facilitate domestic innovations, but also enlarge OFDI's productivity effect on EMEs.

Chapters 4 and 5 have also generated significant implications for MNEs. The findings provide managers with a crucial understanding of how to deal with bribery requests and achieve good performance in a corrupt environment. Perceived government corruption interacts with idiosyncratic MNE subsidiary resources to shape the strategic quantity of bribery. Government corruption has been argued to help increase efficiency via avoiding red

tape, or authorizing specific firm privileges (Kaufmann and Wei, 1999; Wei, 1997). But results in this thesis assert that as a strategic choice in response to government corruption, the role of bribery on performance is unpredictable and costly. Even through some MNE subsidiaries from similar corrupt countries can proactively and systematically take advantage of home country institutional embeddedness by carefully formulating bribery strategies, their behavior is unethical, and their success is costly and not sustainable.

At the same time, the author provides evidence that MNE subsidiaries with strong internal resources and capabilities have more ‘control right’ and ‘refusal power’, and can achieve high performance even by paying no bribe. MNE subsidiaries with strong resources are likely to be expected by corrupt local government officials to pay lower bribery than MNE subsidiaries without such capabilities. Actually the former type of MNE subsidiaries is more welcomed as they bring in high-quality products, capital, high-tech, and experienced talents. This result highlights that the fundamental way for MNE subsidiaries to succeed in a corrupt environment is to develop strong internal resources and capabilities. This not only confers a virtuous cycle for MNE subsidiary performance, but also assists economic development in their host countries.

## **6.5 Research Limitations and Future Research Recommendations**

First, firm performance can be financially measured by various indicators, such as sales per employee, value added per employee, net profit per employee (Girma, Görg, andamp; Strobl, 2004), employment and investment (Dethier, Hirn, andamp; Straub, 2010), return on assets, and return on equity (Peng andamp; Luo, 2000). Given the heterogeneous and sometimes unobserved incentives and profit hiding behavior, an indicator like sales revenue would produce more reliable estimation results. As larger firms may be more visible to government corruption (Fisman andamp; Svensson, 2007), the author takes into account the size effect by using the number of employees to normalize firms’ sales income. Thus for this thesis, the dependent variable – MNE subsidiaries’ performance in chapters 4 and 5 is

measured by fiscal year's sales / permanent fulltime employees + fulltime temporary employees, following Wang & You (2012). But more other measures should have been tried to ensure the rigorousness and robustness of this thesis's estimation results. The author adds this as a limitation for this study because of the limitation of data access.

Second, in chapters 4 and 5, MNE subsidiary top managers' experience as a determinant of the bribing strategy is not significant, nor is its integration with host country institutional corrupt pressures on the bribery-performance relationship. Here the author highlights that the insignificance of estimation results might be due to a lack of detailed data about the manager's characteristics, such as nationality, degree of ties with the host country government, sectors in which the manager has been worked, relations with host country government officials, gender, and education (Collins and Uhlenbruck, 2004). In addition, given the limitation of the data set, the author measures top managers' experience by industry-specific managerial experience rather than international experience. Unrecognition of the types of experience might also be the reason for the insignificant estimation results.

Thus more clarifications of MNE subsidiaries' top manager would help to classify that what individual-level features affect MNE subsidiaries' strategies and the effectiveness of strategies. For future research, studies are encouraged to shed light on managers' influences on MNEs' strategy and performance, as Rugman, Verbeke and Nguyen (2011) emphasize, it is MNE subsidiary managers that combine home and host country specific advantages and firm specific advantages.

Furthermore, due to the limitations of time and data set, the role of institution-based resource on MNEs' OFDI activities has just been partially tested, based on quantitative methods. Future research should consider the complementary nature of qualitative analysis, and exploratory works based on in-depth case studies are recommended to develop and test this concept in a more comprehensive way.

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## Appendix: The Augmented Olley-Pakes TFP Measures

In this appendix, I introduce and explain how I use the augmented Olley-Pakes approach to estimate firm-level TFP by taking the role of exporting and investing abroad<sup>40</sup>.

The first step is to estimate the coefficients of intermediate input and labor input. The common Cobb-Douglas production function is adopted here:

$$Y_{it} = A_{it} K_{it}^{\beta_k} L_{it}^{\beta_l} M_{it}^{\beta_m} \quad (10)$$

where,  $Y_{it}$  is firm  $i$ 's output in year  $t$ ,  $K_{it}$  its capital stock,  $L_{it}$  labor input, and  $M_{it}$  is intermediary input. Firm  $i$ 's decision to maximize its net future profits is characterized by the following Bellman equation:

$$V_{it}(k_{it}, \omega_{it}, EF_{it}, OFDI_{it}) = \max_{I_{it} \geq 0} \{ \Phi, \sup \pi_{it}(\omega_{it}, k_{it}, EF_{it}, OFDI_{it}) - C_{it}(I_{it}) + \beta E[V_{it}(k_{it+1}, \omega_{it+1}, EF_{it+1}, OFDI_{it+1}) | J_{it}] \} \quad (11)$$

where  $k_{it} = \ln K_{it}$ ,  $\omega_{it}$  represents the firm's productivity,  $EF_{it}$  is export status,  $OFDI_{it}$  indicates firm's OFDI status<sup>41</sup>,  $\Phi$  represents the liquidation value,  $\pi_{it}(\cdot)$  is profit function,  $C_{it}(\cdot)$  is the cost of current investment,  $\beta$  is the discount factor, and  $J_{it}$  means the information firm  $i$  has in period  $t$ . Thus the decision rule for firm  $i$  to exit the market can be written as follows:

$$\chi_{it} = \begin{cases} 1 & \text{if } \omega_{it} \geq \underline{\omega}_{it}(k_{it}, EF_{it}, OFDI_{it}) \\ 0 & \text{otherwise} \end{cases} \quad (12)$$

where  $\chi_{it}$  is an indicator.  $\chi_{it}$  equals to 1 if the firm decide to stay in the market, and 0 if it decides to exit. I assume that the expected productivity is a function of current productivity and capital, then the firm's investment function can be expressed by Eq.(13) after incorporating its exporting and OFDI status.

$$I_{it} = I(k_{it}, \omega_{it}, EF_{it}, OFDI_{it}) \quad (13)$$

<sup>40</sup> According to De Loecker (2007), Amiti and Konings(2007) and Yu(2014), exporting firms may have different production function as they have access to foreign markets. Similarly, firms engaging in outward foreign direct investment may face different input choice, thus have different production function.

<sup>41</sup> For each firm, we let OFDI indicator equal to 1 after it starts to invest abroad, which implies that production process of parent firm will be altered after it conducts OFDI.

Then the productivity can be expressed by the inverse function of investment<sup>42</sup>:

$$\omega_{it} = I^{-1}(k_{it}, I_{it}, EF_{it}, OFDI_{it}) \quad (14)$$

From now on, I can explicitly control the productivity shock when estimating firms' production function, so as to alleviate the simultaneity bias. The production function can be estimated as follows:

$$\ln Y_{it} = \beta_0 + \beta_m \ln M_{it} + \beta_l \ln L_{it} + g(\ln K_{it}, I_{it}, EF_{it}, OFDI_{it}) + \varepsilon_{it} \quad (15)$$

where,  $g(\ln K_{it}, I_{it}, EF_{it}, OFDI_{it}) = \beta_k \ln K_{it} + I^{-1}(k_{it}, I_{it}, EF_{it}, OFDI_{it})$ . Similar to Amiti and Konings (2007), De Loecker(2007) and Yu(2014), I utilize a third-order polynomials<sup>43</sup> in log-capital, log-investment, export dummy and OFDI dummy to approximate  $g(\cdot)$ , i.e.,

$$g(\ln K_{it}, I_{it}, EF_{it}, OFDI_{it}) = (1 + EF_{it} + OFDI_{it}) \sum_{j=0}^{3-q} \sum_{q=0}^3 \alpha_{jq} k_{it}^j I_{it}^q \quad (16)$$

Then I can estimate the coefficient of labor  $\beta_l$  and intermediary input  $\beta_m$ .

The second step is to estimate the coefficient of capital  $\beta_k$ . In order to control the sample selection bias, a Probit model is employed to estimate the firm's survival probability. As the firm's survival productivity depends on its productivity and its productivity depends on its previous capital stock, investment, export status and OFDI status, a third-order polynomial similar to Eq.(16) is utilized to estimate the survival probability. With the predicted probabilities  $\hat{P}_{it}$ , I can estimate the coefficient of capital  $\beta_k$ :

$$\ln Y_{it} - \hat{\beta}_m \ln M_{it} - \hat{\beta}_l \ln L_{it} = \beta_k \ln K_{it} + I^{-1}(\hat{g}_{it-1} - \beta_k \ln K_{it-1}, \hat{P}_{it}) + \varepsilon_{it} \quad (17)$$

In the last step, firm-level TFP can be calculated from the log-production function with the estimated coefficients as follows:

$$\ln TFP_{it}^{op} = \ln Y_{it} - \hat{\beta}_k \ln K_{it} - \hat{\beta}_m \ln M_{it} - \hat{\beta}_l \ln L_{it} \quad (18)$$

<sup>42</sup> Here is an implicit assumption, investment is increasing in productivity. Under a little assumption about the production function, Pakes (1994) has verified this assumption.

<sup>43</sup> Using higher-order polynomials to approximate  $g(\cdot)$  does not change the estimation results (Olley and Pakes, 1996).